DOCUMENTATION OF STATION/AGENCY MAGNITUDE PROCEDURES

(Modified from the SUMMARY OF IASPEI MAGNITUDE WORKING GROUP RECOMMENDATIONS ON DETERMINING EARTHQUAKE MAGNITUDES FROM DIGITAL DATA, updated version 2011; see http://www.iaspei.org/commissions/CSOI/Summary_WG-Recommendations_20110909.pdf)

This document is to outline the procedures adopted by seismological agencies to compute magnitudes of seismic events.

Agency Name: Sakhalin branch GS RAS (SB GS RAS)

Please list the magnitudes computed and corresponding phase type analyzed in the table below (example provided). Add as many rows as required.

Magnitude type (nomenclature used at the agency)	Full name	Wave type analyzed
MLH	Long-period surface-wave magnitude	LR-waves
MLV	Long-period surface-wave magnitude	LR-waves
MPV	Long-period body-wave magnitude	P-waves
MPH	Long-period body-wave magnitude	P-waves
MSH	Long-period body-wave magnitude	S-waves
MPVA	Short-period body-wave magnitude	P-waves
MSHA	Short-period body-wave magnitude	S-waves
K_C (Klass of Solov'ev)	Short-period body-wave magnitude	S-waves
K_P (Klass of Rautian)	Short-period body-wave magnitude	P-waves and S-waves

For each magnitude type computed at the agency, please specify:

MLH

1. The equations that are used for calculating each magnitude type and

a: specify if distance is measured as epicentral distance or hypocentral distance;
b: specify the distance range for which the equation is applied;
c: specify restrictions on hypocentral focal-depth, if any.

MLH = lg(A/T)max + σ(Δ)

Δ°	σ(Δ)	Δ°	σ(Δ)	Δ°	σ(Δ)
1	3.45	7	5.31	13	5.62
2	4.30	8	5.40	14	5.73
3	4.57	9	5.41	15	5.74
4	4.85	10	5.42	16	5.75
5	5.13	11	5.51	17	5.80
6	5.21	12	5.52	18	5.80

A – SKD simulation amplitude measured in micrometers
T – period measured in seconds
Δ – epicentral distance in degrees, 1°<Δ<18°

2. Is any signal-to-noise ratio criterion applied to the analyzed signal?
No

3. Specify the software used (such as SeisComp, Antelope, Seismic Handler, Seisan, SAC, in-house developed programs) to perform the analyses for magnitude computation.
MGPW, DIMAS

4. If the agency is computing magnitudes not based on some amplitude/period measurement (e.g., moment magnitude Mw) please summarize the details of the technique used. For example, is Mw obtained with a centroid moment tensor, W-phase and/or spectral fitting technique?
No

5. Other restrictions on the calculation of a specific magnitude. For example, is the magnitude measured only for earthquakes of a certain size, as defined by an independent measure of earthquake size? Also, are specific magnitudes computed only for seismic events occurring in specific areas?
No

Detailed questions on the magnitudes based on amplitude/period measurements:

6. How the network (event) magnitude and corresponding uncertainty is obtained? For example, is the network magnitude an arithmetic/trimmed mean, median value of the single station magnitudes?
Arithmetic mean

7. Units of the reported amplitudes. Specify if amplitudes are reported in units of trace-amplitude motion instead of ground motion.

micrometers

8. Time-window in which the amplitude measurement is made for the phase type analyzed. For example, for body wave magnitudes, is the time window a flexible time-interval between the P onset and the PP onset or a fixed time window after the first P onset (e.g. 5 s, 10 s or other)? Similarly, for the surface wave magnitudes, is the time window considered a time-interval spanned by waves having group-velocities between, e.g., 3.2 and 4.0 km/s or is always the maximum velocity amplitude, respectively (A/T)max in the whole surface-wave train in a wide range of periods be measured? If so, give the range of periods.

Time interval of maximal amplitudes in the whole wave train in a wide range of periods

9. Orientation of seismograph (horizontal or vertical) from which the measurement is made. For example, is Ms computed using both horizontal and vertical components? Specify also if, as for example might be the case for ML, data from each of the two horizontal components at a single station are used, are data from each component treated as a separate observation in the network magnitude computation, or are the two components first averaged into a station magnitude, which is then treated as a single observation in the network magnitude computation?

MLH is computed for both horizontal components.

10. Describe the amplitude-response, filter characteristics, or transfer-function of the seismograph or simulated seismograph through which the amplitude measurement is made. For example, is the IASPEI recommended standard Wood-Anderson seismometer simulation filter with the parameters according to Uhrhammer and Collins (1990) used to compute ML?

Seismometer of Kirnos simulation (SKD)

11. Details of measuring amplitude:

a: For example, does the amplitude correspond to 0.5*(peak-to-trough amplitude), where “peak-to-trough amplitude” corresponds to difference between a maximum positive excursion and a maximum negative excursion of the trace, or is the amplitude instead measured as the maximum absolute excursion from the “zero” position of the seismograph trace?

b: for example, if the amplitude corresponds to 0.5*(peak-to-trough amplitude), are the “peak” and “trough” respectively the absolute maximum and absolute minimum values of the entire wave-group, or are they the adjacent peak and trough corresponding to the maximum trace excursion that is associated with a single zero-crossing?

c: for example, are displacement amplitude(A) and period(T) measured at the time of maximum A or at the time of the maximum of the quotient (A/T)?

a: amplitude corresponds to 0.5*(peak-to-trough amplitude)
b: they are the adjacent peak and trough
c: displacement amplitude (A) and period (T) are measured at the time of maximum A

12. Details of measuring period. For example, is it the time between the neighboring peaks, respectively troughs or twice the time span measured between the largest peak and adjacent trough at which the double amplitude has been measured?

Period is it the time between the neighboring peaks, respectively troughs

13. To what part of a phase the amplitude-measurement time refers. For example, is the amplitude-measurement time the time of the zero-crossing associated with a peak-to-adjacent trough measurement or is it the time of an absolute maximum or absolute minimum?

It is the time of an absolute maximum or absolute minimum

For each magnitude type computed at the agency, please specify:

MLV

1. The equations that are used for calculating each magnitude type and

a: specify if distance is measured as epicentral distance or hypocentral distance;

b: specify the distance range for which the equation is applied;

c: specify restrictions on hypocentral focal-depth, if any.

$MLV = \lg(A/T)max + \sigma(\Delta)$

Δ°	σ(Δ)	Δ°	σ(Δ)	Δ°	σ(Δ)
1	3.45	7	5.31	13	5.62
2	4.30	8	5.40	14	5.73
3	4.57	9	5.41	15	5.74
4	4.85	10	5.42	16	5.75
5	5.13	11	5.51	17	5.80
6	5.21	12	5.52	18	5.80

A – SKD simulation amplitude measured in micrometers
T – period measured in seconds
Δ – epicentral distance in degrees, $1° < \Delta < 18°$

2. Is any signal-to-noise ratio criterion applied to the analyzed signal?

No

3. Specify the software used (such as SeisComp, Antelope, Seismic Handler, Seisan, SAC, in-house developed programs) to perform the analyses for magnitude computation.

MGPW, DIMAS

4. If the agency is computing magnitudes not based on some amplitude/period measurement (e.g., moment magnitude Mw) please summarize the details of the technique used. For example, is Mw obtained with a centroid moment tensor, W-phase and/or spectral fitting technique?

No

5. Other restrictions on the calculation of a specific magnitude. For example, is the magnitude measured only for earthquakes of a certain size, as defined by an independent measure of earthquake size? Also, are specific magnitudes computed only for seismic events occurring in specific areas?

No

Detailed questions on the magnitudes based on amplitude/period measurements:

6. How the network (event) magnitude and corresponding uncertainty is obtained? For example, is the network magnitude an arithmetic/trimmed mean, median value of the single station magnitudes?

Arithmetic mean

7. Units of the reported amplitudes. Specify if amplitudes are reported in units of trace-amplitude motion instead of ground motion.

micrometers

8. Time-window in which the amplitude measurement is made for the phase type analyzed. For example, for body wave magnitudes, is the time window a flexible time-interval between the P onset and the PP onset or a fixed time window after the first P onset (e.g. 5 s, 10 s or other)? Similarly, for the surface wave magnitudes, is the time window considered a time-interval spanned by waves having group-velocities between, e.g., 3.2 and 4.0 km/s or is always the maximum velocity amplitude, respectively (A/T)max in the whole surface-wave train in a wide range of periods be measured? If so, give the range of periods.

Time interval of maximal amplitudes in the whole wave train in a wide range of periods

9. Orientation of seismograph (horizontal or vertical) from which the measurement is made. For example, is Ms computed using both horizontal and vertical components? Specify also if, as for example might be the case for ML, data from each of the two horizontal components at a single station are used, are data from each component treated as a separate observation in the network magnitude computation, or are the two

components first averaged into a station magnitude, which is then treated as a single observation in the network magnitude computation?

MLV is computed for vertical components.

10. Describe the amplitude-response, filter characteristics, or transfer-function of the seismograph or simulated seismograph through which the amplitude measurement is made. For example, is the IASPEI recommended standard Wood-Anderson seismometer simulation filter with the parameters according to Uhrhammer and Collins (1990) used to compute ML?

Seismometer of Kirnos simulation (SKD)

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a: For example, does the amplitude correspond to 0.5*(peak-to-trough amplitude), where “peak-to-trough amplitude” corresponds to difference between a maximum positive excursion and a maximum negative excursion of the trace, or is the amplitude instead measured as the maximum absolute excursion from the “zero” position of the seismograph trace?

b: for example, if the amplitude corresponds to 0.5*(peak-to-trough amplitude), are the “peak” and “trough” respectively the absolute maximum and absolute minimum values of the entire wave-group, or are they the adjacent peak and trough corresponding to the maximum trace excursion that is associated with a single zero-crossing?

c: for example, are displacement amplitude(A) and period(T) measured at the time of maximum A or at the time of the maximum of the quotient (A/T)?

a: amplitude corresponds to 0.5*(peak-to-trough amplitude)

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It is the time of an absolute maximum or absolute minimum

For each magnitude type computed at the agency, please specify:

MPV

1. The equations that are used for calculating each magnitude type and

a: specify if distance is measured as epicentral distance or hypocentral distance;
b: specify the distance range for which the equation is applied;
c: specify restrictions on hypocentral focal-depth, if any.

$$MPV = \lg(A/T)max + \sigma(\Delta)$$

Δ°	σ(Δ)	Δ°	σ(Δ)	Δ°	σ(Δ)
0.5	5.30	9	6.30	18	6.50
1	5.43	10	6.36	19	6.28
2	5.66	11	6.41	20	6.23
3	5.95	12	6.46	21	6.28
4	6.18	13	6.50	22	6.29
5	6.28	14	6.47	23	6.31
6	6.32	15	6.47	24	6.35
7	6.35	16	6.47		
8	6.38	17	6.52		

A – SKD simulation amplitude measured in micrometers
T – period measured in seconds
Δ – epicentral distance in degrees, $0.5° < \Delta < 24°$
focal depth h: $10 \text{ km} \leq h \leq 80 \text{ km}$

2. Is any signal-to-noise ratio criterion applied to the analyzed signal?

No

3. Specify the software used (such as SeisComp, Antelope, Seismic Handler, Seisan, SAC, in-house developed programs) to perform the analyses for magnitude computation.

MGPW, DIMAS

4. If the agency is computing magnitudes not based on some amplitude/period measurement (e.g., moment magnitude Mw) please summarize the details of the technique used. For example, is Mw obtained with a centroid moment tensor, W-phase and/or spectral fitting technique?

No

5. Other restrictions on the calculation of a specific magnitude. For example, is the magnitude measured only for earthquakes of a certain size, as defined by an independent measure of earthquake size? Also, are specific magnitudes computed only for seismic events occurring in specific areas?

No

Detailed questions on the magnitudes based on amplitude/period measurements:

6. How the network (event) magnitude and corresponding uncertainty is obtained? For example, is the network magnitude an arithmetic/trimmed mean, median value of the single station magnitudes?

Arithmetic mean

7. Units of the reported amplitudes. Specify if amplitudes are reported in units of trace-amplitude motion instead of ground motion.

micrometers

8. Time-window in which the amplitude measurement is made for the phase type analyzed. For example, for body wave magnitudes, is the time window a flexible time-interval between the P onset and the PP onset or a fixed time window after the first P onset (e.g. 5 s, 10 s or other)? Similarly, for the surface wave magnitudes, is the time window considered a time-interval spanned by waves having group-velocities between, e.g., 3.2 and 4.0 km/s or is always the maximum velocity amplitude, respectively (A/T)max in the whole surface-wave train in a wide range of periods be measured? If so, give the range of periods.

Time interval of maximal amplitudes in the whole wave train in a wide range of periods

9. Orientation of seismograph (horizontal or vertical) from which the measurement is made. For example, is Ms computed using both horizontal and vertical components? Specify also if, as for example might be the case for ML, data from each of the two horizontal components at a single station are used, are data from each component treated as a separate observation in the network magnitude computation, or are the two components first averaged into a station magnitude, which is then treated as a single observation in the network magnitude computation?

MPV is computed for vertical components

10. Describe the amplitude-response, filter characteristics, or transfer-function of the seismograph or simulated seismograph through which the amplitude measurement is made. For example, is the IASPEI recommended standard Wood-Anderson seismometer simulation filter with the parameters according to Uhrhammer and Collins (1990) used to compute ML?

Seismometer of Kirnos simulation (SKD)

11. Details of measuring amplitude:

a: For example, does the amplitude correspond to 0.5*(peak-to-trough amplitude), where “peak-to-trough amplitude” corresponds to difference between a maximum positive excursion and a maximum negative excursion of the trace, or is the amplitude instead measured as the maximum absolute excursion from the “zero” position of the seismograph trace?

b: for example, if the amplitude corresponds to 0.5*(peak-to-trough amplitude), are the “peak” and “trough” respectively the absolute

maximum and absolute minimum values of the entire wave-group, or are they the adjacent peak and trough corresponding to the maximum trace excursion that is associated with a single zero-crossing?

c: for example, are displacement amplitude(A) and period(T) measured at the time of maximum A or at the time of the maximum of the quotient (A/T)?

a: amplitude corresponds to 0.5*(peak-to-trough amplitude)

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12. Details of measuring period. For example, is it the time between the neighboring peaks, respectively troughs or twice the time span measured between the largest peak and adjacent trough at which the double amplitude has been measured?

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13. To what part of a phase the amplitude-measurement time refers. For example, is the amplitude-measurement time the time of the zero-crossing associated with a peak-to-adjacent trough measurement or is it the time of an absolute maximum or absolute minimum?

It is the time of an absolute maximum or absolute minimum

For each magnitude type computed at the agency, please specify:

MPV for deep earthquakes

1. The equations that are used for calculating each magnitude type and

a: specify if distance is measured as epicentral distance or hypocentral distance;

b: specify the distance range for which the equation is applied;

c: specify restrictions on hypocentral focal-depth, if any.

$$MPV = \lg(A/T)max + \sigma(\Delta, h)$$

A – SKD simulation amplitude measured in micrometers

T – period measured in seconds

Δ – epicentral distance in degrees, Δ≥5°

focal depth h: h >80 km

Δ°	h=81–120 km	121–150	151–200	201–320	321–400	401–650
1	5.08	5.11	5.42	5.64	5.55	-
2	5.38	5.27	5.18	5.63	5.50	5.42
3	5.80	5.67	5.68	5.77	5.50	5.51
4	5.97	5.98	5.67	5.67	5.79	5.67
5	6.02	5.85	5.91	5.60	5.90	5.54

6	6.15	6.12	5.89	5.80	5.74	5.63
7	6.28	6.10	6.07	5.99	5.97	5.76
8	6.28	6.31	6.08	6.24	6.20	5.89
9	6.36	6.40	6.23	6.17	6.31	6.14
10	6.26	6.32	6.45	6.30	6.21	6.31
11	6.42	6.50	6.53	6.42	-	6.46
12	6.47	6.47	6.53	6.47	-	6.51
13	6.65	6.60	6.51	-	-	-
14	6.60	6.50	6.46	-	-	-
15	6.48	6.53	-	-	-	-
16	6.30	6.55	-	-	-	-

2. Is any signal-to-noise ratio criterion applied to the analyzed signal?

No

3. Specify the software used (such as SeisComp, Antelope, Seismic Handler, Seisan, SAC, in-house developed programs) to perform the analyses for magnitude computation.

MGPW, DIMAS

4. If the agency is computing magnitudes not based on some amplitude/period measurement (e.g., moment magnitude Mw) please summarize the details of the technique used. For example, is Mw obtained with a centroid moment tensor, W-phase and/or spectral fitting technique?

No

5. Other restrictions on the calculation of a specific magnitude. For example, is the magnitude measured only for earthquakes of a certain size, as defined by an independent measure of earthquake size? Also, are specific magnitudes computed only for seismic events occurring in specific areas?

No

Detailed questions on the magnitudes based on amplitude/period measurements:

6. How the network (event) magnitude and corresponding uncertainty is obtained? For example, is the network magnitude an arithmetic/trimmed mean, median value of the single station magnitudes?

Arithmetic mean

7. Units of the reported amplitudes. Specify if amplitudes are reported in units of trace-amplitude motion instead of ground motion.

micrometers

8. Time-window in which the amplitude measurement is made for the phase type analyzed. For example, for body wave magnitudes, is the time window a flexible time-interval between the P onset and the PP onset or a fixed time window after the first P onset (e.g. 5 s, 10 s or other)? Similarly, for the surface wave magnitudes, is the time window considered a time-interval spanned by waves having group-velocities

between, e.g., 3.2 and 4.0 km/s or is always the maximum velocity amplitude, respectively (A/T)max in the whole surface-wave train in a wide range of periods be measured? If so, give the range of periods.

Time interval of maximal amplitudes in the whole wave train in a wide range of periods

9. Orientation of seismograph (horizontal or vertical) from which the measurement is made. For example, is Ms computed using both horizontal and vertical components? Specify also if, as for example might be the case for ML, data from each of the two horizontal components at a single station are used, are data from each component treated as a separate observation in the network magnitude computation, or are the two components first averaged into a station magnitude, which is then treated as a single observation in the network magnitude computation?

MPV is computed for vertical component

10. Describe the amplitude-response, filter characteristics, or transfer-function of the seismograph or simulated seismograph through which the amplitude measurement is made. For example, is the IASPEI recommended standard Wood-Anderson seismometer simulation filter with the parameters according to Uhrhammer and Collins (1990) used to compute ML?

Seismometer of Kirnos simulation (SKD)

11. Details of measuring amplitude:

a: For example, does the amplitude correspond to 0.5*(peak-to-trough amplitude), where “peak-to-trough amplitude” corresponds to difference between a maximum positive excursion and a maximum negative excursion of the trace, or is the amplitude instead measured as the maximum absolute excursion from the “zero” position of the seismograph trace?

b: for example, if the amplitude corresponds to 0.5*(peak-to-trough amplitude), are the “peak” and “trough” respectively the absolute maximum and absolute minimum values of the entire wave-group, or are they the adjacent peak and trough corresponding to the maximum trace excursion that is associated with a single zero-crossing?

c: for example, are displacement amplitude(A) and period(T) measured at the time of maximum A or at the time of the maximum of the quotient (A/T)?

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12. Details of measuring period. For example, is it the time between the neighboring peaks, respectively troughs or twice the time span measured between the largest peak and adjacent trough at which the double amplitude has been measured?

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It is the time of an absolute maximum or absolute minimum

For each magnitude type computed at the agency, please specify:

MPH

1. The equations that are used for calculating each magnitude type and

a: specify if distance is measured as epicentral distance or hypocentral distance;

b: specify the distance range for which the equation is applied;

c: specify restrictions on hypocentral focal-depth, if any.

$$MPH = \lg(A/T)max + \sigma(\Delta,h)$$

Δ°	h=10–80 km	81–120	121–150	151–200	201–320	321–400	401–650
1		5.25	5.00	4.94	5.46	5.71	
2	5.50	5.50	5.27	5.33	5.64	5.64	5.70
3	5.70	5.58	5.20	5.73	5.42	5.63	5.75
4	5.92	5.78	5.87	5.75	5.67	5.79	5.94
5	6.05	5.97	5.80	5.92	6.09	5.09	5.99
6	6.23	5.97	5.77	5.77	5.98	5.94	5.95
7	6.22	6.14	5.92	6.00	6.22	5.94	6.02
8	6.20	6.10	6.35	6.22	6.23	6.28	6.04
9	6.21	6.18	6.47	6.32	6.16	6.36	6.06
10	6.22	6.12	6.48	6.38	6.06	6.14	6.28
11	6.21	6.25	-	6.33	-	-	6.43
12	6.28	6.39	-	6.25	-	6.22	-
13	6.42	6.45	-	6.31	-	-	-

A – SKD simulation amplitude measured in micrometers

T – period measured in seconds

Δ – epicentral distance in degrees, $1° < \Delta < 13°$

2. Is any signal-to-noise ratio criterion applied to the analyzed signal?

No

3. Specify the software used (such as SeisComp, Antelope, Seismic Handler, Seisan, SAC, in-house developed programs) to perform the analyses for magnitude computation.

MGPW, DIMAS

4. If the agency is computing magnitudes not based on some amplitude/period measurement (e.g., moment magnitude Mw) please summarize the details of the technique used. For example, is Mw obtained with a centroid moment tensor, W-phase and/or spectral fitting technique?

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6. How the network (event) magnitude and corresponding uncertainty is obtained? For example, is the network magnitude an arithmetic/trimmed mean, median value of the single station magnitudes?

Arithmetic mean

7. Units of the reported amplitudes. Specify if amplitudes are reported in units of trace-amplitude motion instead of ground motion.

micrometers

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Time interval of maximal amplitudes in the whole wave train in a wide range of periods

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MPH is computed for both horizontal components

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Seismometer of Kirnos simulation (SKD)

11. Details of measuring amplitude:

a: For example, does the amplitude correspond to 0.5*(peak-to-trough amplitude), where “peak-to-trough amplitude” corresponds to difference between a maximum positive excursion and a maximum negative excursion of the trace, or is the amplitude instead measured as the maximum absolute excursion from the “zero” position of the seismograph trace?

b: for example, if the amplitude corresponds to 0.5*(peak-to-trough amplitude), are the “peak” and “trough” respectively the absolute maximum and absolute minimum values of the entire wave-group, or are they the adjacent peak and trough corresponding to the maximum trace excursion that is associated with a single zero-crossing?

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12. Details of measuring period. For example, is it the time between the neighboring peaks, respectively troughs or twice the time span measured between the largest peak and adjacent trough at which the double amplitude has been measured?

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It is the time of an absolute maximum or absolute minimum

For each magnitude type computed at the agency, please specify:

MSH

1. The equations that are used for calculating each magnitude type and

a: specify if distance is measured as epicentral distance or hypocentral distance;
b: specify the distance range for which the equation is applied;
c: specify restrictions on hypocentral focal-depth, if any.

MSH = lg(A/T)max + σ(Δ)

Δ°	σ(Δ)	Δ°	σ(Δ)	Δ°	σ(Δ)
0.5	2.56	9	5.92	18	6.12
1	3.62	10	6.00	19	6.09
2	4.60	11	6.05	20	6.08
3	5.00	12	6.12	21	6.09
4	5.13	13	6.15	22	6.12
5	5.48	14	6.30	23	6.15
6	5.54	15	6.41	24	6.20
7	5.70	16	6.33		
8	5.81	17	6.22		

A – SKD simulation amplitude measured in micrometers
T – period measured in seconds
Δ – epicentral distance in degrees, 0.5°<Δ<24°
focal depth h: 10 km ≤ h ≤ 70 km

MSH = lg(A/T)max + σ(Δ,h)

Δ°	h=90–120 km	121–150	151–200	201–320	321–400	401–650
1	4.20	4.33	4.62	5.17	4.96	4.74
2	4.83	4.84	5.21	5.13	4.79	5.07
3	5.03	5.30	5.35	5.41	5.07	5.36
4	5.40	5.40	5.30	5.36	5.27	5.28
5	5.50	5.60	5.58	5.53	5.40	5.34
6	5.64	5.71	5.16	5.68	5.54	5.60
7	5.72	5.88	5.17	5.98	5.34	5.70
8	5.93	6.04	5.35	6.05	5.56	5.46
9	6.10	6.09	5.83	6.20	5.61	5.75
10	6.12	6.23	5.92	6.11	5.69	5.75
11	6.22	6.50	6.00	5.94	-	5.92
12	6.34	6.16	6.20	6.03	-	6.03
13	6.20	6.53	6.33	-	-	5.94
14	6.32	6.52	-	-	-	5.90
15	6.35	5.83	-	-	-	-

16	6.35	-	-	-	-	-

A – SKD simulation amplitude measured in micrometers
T – period measured in seconds
Δ – epicentral distance in degrees, 1°<Δ<16°

2. Is any signal-to-noise ratio criterion applied to the analyzed signal?

No
No

3. Specify the software used (such as SeisComp, Antelope, Seismic Handler, Seisan, SAC, in-house developed programs) to perform the analyses for magnitude computation.

MGPW, DIMAS
MGPW, DIMAS

4. If the agency is computing magnitudes not based on some amplitude/period measurement (e.g., moment magnitude Mw) please summarize the details of the technique used. For example, is Mw obtained with a centroid moment tensor, W-phase and/or spectral fitting technique?

No
No

5. Other restrictions on the calculation of a specific magnitude. For example, is the magnitude measured only for earthquakes of a certain size, as defined by an independent measure of earthquake size? Also, are specific magnitudes computed only for seismic events occurring in specific areas?

No
No

Detailed questions on the magnitudes based on amplitude/period measurements:

6. How the network (event) magnitude and corresponding uncertainty is obtained? For example, is the network magnitude an arithmetic/trimmed mean, median value of the single station magnitudes?

Arithmetic mean
Arithmetic mean

7. Units of the reported amplitudes. Specify if amplitudes are reported in units of trace-amplitude motion instead of ground motion.

micrometers
micrometers

8. Time-window in which the amplitude measurement is made for the phase type analyzed. For example, for body wave magnitudes, is the time window a flexible time-interval between the P onset and the PP onset or a fixed time window after the first P onset (e.g. 5 s, 10 s or other)? Similarly, for the surface wave magnitudes, is the time window considered a time-interval spanned by waves having group-velocities between, e.g., 3.2 and 4.0 km/s or is always the maximum velocity amplitude, respectively (A/T)max in the whole surface-wave train in a wide range of periods be measured? If so, give the range of periods.

Time interval of maximal amplitudes in the whole wave train in a wide range of periods

Time interval of maximal amplitudes in the whole wave train in a wide range of periods

9. Orientation of seismograph (horizontal or vertical) from which the measurement is made. For example, is Ms computed using both horizontal and vertical components? Specify also if, as for example might be the case for ML, data from each of the two horizontal components at a single station are used, are data from each component treated as a separate observation in the network magnitude computation, or are the two components first averaged into a station magnitude, which is then treated as a single observation in the network magnitude computation?

MSH is computed for both horizontal components

MSH is computed for both horizontal components

10. Describe the amplitude-response, filter characteristics, or transfer-function of the seismograph or simulated seismograph through which the amplitude measurement is made. For example, is the IASPEI recommended standard Wood-Anderson seismometer simulation filter with the parameters according to Uhrhammer and Collins (1990) used to compute ML?

Seismometer of Kirnos simulation (SKD)

Seismometer of Kirnos simulation (SKD)

11. Details of measuring amplitude:

a: For example, does the amplitude correspond to 0.5*(peak-to-trough amplitude), where “peak-to-trough amplitude” corresponds to difference between a maximum positive excursion and a maximum negative excursion of the trace, or is the amplitude instead measured as the maximum absolute excursion from the “zero” position of the seismograph trace?

b: for example, if the amplitude corresponds to 0.5*(peak-to-trough amplitude), are the “peak” and “trough” respectively the absolute maximum and absolute minimum values of the entire wave-group, or are

they the adjacent peak and trough corresponding to the maximum trace excursion that is associated with a single zero-crossing?

c: for example, are displacement amplitude(A) and period(T) measured at the time of maximum A or at the time of the maximum of the quotient (A/T)?

a: amplitude corresponds to 0.5*(peak-to-trough amplitude)

b: they are the adjacent peak and trough

c: displacement amplitude (A) and period (T) are measured at the time of maximum A

a: amplitude corresponds to 0.5*(peak-to-trough amplitude)

b: they are the adjacent peak and trough

c: displacement amplitude (A) and period (T) are measured at the time of maximum A

12. Details of measuring period. For example, is it the time between the neighboring peaks, respectively troughs or twice the time span measured between the largest peak and adjacent trough at which the double amplitude has been measured?

Period is it the time between the neighboring peaks, respectively troughs or twice the time span measured between the largest peak and adjacent trough at which the double amplitude has been measured

Period is it the time between the neighboring peaks, respectively troughs or twice the time span measured between the largest peak and adjacent trough at which the double amplitude has been measured

13. To what part of a phase the amplitude-measurement time refers. For example, is the amplitude-measurement time the time of the zero-crossing associated with a peak-to-adjacent trough measurement or is it the time of an absolute maximum or absolute minimum?

It is the time of an absolute maximum or absolute minimum

It is the time of an absolute maximum or absolute minimum

For each magnitude type computed at the agency, please specify:

MPVA for shallow focus earthquake

1. The equations that are used for calculating each magnitude type and

a: specify if distance is measured as epicentral distance or hypocentral distance;

b: specify the distance range for which the equation is applied;

c: specify restrictions on hypocentral focal-depth, if any.

MPVA = $\lg(A/T)_{max} + \sigma(\Delta)$

A – SKM simulation amplitude measured in micrometers
T – period measured in seconds
Δ – epicentral distance in degrees, $0.1° \leq \Delta \leq 17°$
$0 \text{ km} \leq h \leq 80 \text{ km}$

Δ°	σ(Δ, h)
1.1 – 1	4.5
1.1 – 2	4.8
2.1 – 3	5.2
3.1 – 4	5.3
4.1 – 5	5.6
5.1 – 6	5.7
6.1 – 7	5.8
7.1 – 8	6.0
8.1 – 9	6.1
9.1 – 10	6.0
10.1 – 11	6.4
11.1 – 12	6.4
12.1 – 13	6.4
13.1 – 14	6.5
14.1 – 15	6.4
15.1 – 16	6.4
16.1 – 17	6.5

2. Is any signal-to-noise ratio criterion applied to the analyzed signal?

No

3. Specify the software used (such as SeisComp, Antelope, Seismic Handler, Seisan, SAC, in-house developed programs) to perform the analyses for magnitude computation.

MGPW, DIMAS

4. If the agency is computing magnitudes not based on some amplitude/period measurement (e.g., moment magnitude Mw) please summarize the details of the technique used. For example, is Mw obtained with a centroid moment tensor, W-phase and/or spectral fitting technique?

No

5. Other restrictions on the calculation of a specific magnitude. For example, is the magnitude measured only for earthquakes of a certain size, as defined by an independent measure of earthquake size? Also, are specific magnitudes computed only for seismic events occurring in specific areas?

No

Detailed questions on the magnitudes based on amplitude/period measurements:

6. How the network (event) magnitude and corresponding uncertainty is obtained? For example, is the network magnitude an arithmetic/trimmed mean, median value of the single station magnitudes?

Arithmetic mean

7. Units of the reported amplitudes. Specify if amplitudes are reported in units of trace-amplitude motion instead of ground motion.

micrometers

8. Time-window in which the amplitude measurement is made for the phase type analyzed. For example, for body wave magnitudes, is the time window a flexible time-interval between the P onset and the PP onset or a fixed time window after the first P onset (e.g. 5 s, 10 s or other)? Similarly, for the surface wave magnitudes, is the time window considered a time-interval spanned by waves having group-velocities between, e.g., 3.2 and 4.0 km/s or is always the maximum velocity amplitude, respectively (A/T)max in the whole surface-wave train in a wide range of periods be measured? If so, give the range of periods.

Time interval of maximal amplitudes in the whole wave train in a wide range of periods

9. Orientation of seismograph (horizontal or vertical) from which the measurement is made. For example, is Ms computed using both horizontal and vertical components? Specify also if, as for example might be the case for ML, data from each of the two horizontal components at a single station are used, are data from each component treated as a separate observation in the network magnitude computation, or are the two components first averaged into a station magnitude, which is then treated as a single observation in the network magnitude computation?

MPVA is computed for vertical component

10. Describe the amplitude-response, filter characteristics, or transfer-function of the seismograph or simulated seismograph through which the amplitude measurement is made. For example, is the IASPEI recommended standard Wood-Anderson seismometer simulation filter with the parameters according to Uhrhammer and Collins (1990) used to compute ML?

Seismometer of Kirnos simulation (SKM)

11. Details of measuring amplitude:

a: For example, does the amplitude correspond to 0.5*(peak-to-trough amplitude), where “peak-to-trough amplitude” corresponds to difference between a maximum positive excursion and a maximum negative excursion of the trace, or is the amplitude instead measured as the maximum absolute excursion from the “zero” position of the seismograph trace?

b: for example, if the amplitude corresponds to 0.5*(peak-to-trough amplitude), are the “peak” and “trough” respectively the absolute

maximum and absolute minimum values of the entire wave-group, or are they the adjacent peak and trough corresponding to the maximum trace excursion that is associated with a single zero-crossing?

c: for example, are displacement amplitude(A) and period(T) measured at the time of maximum A or at the time of the maximum of the quotient (A/T)?

a: amplitude corresponds to 0.5*(peak-to-trough amplitude)

b: they are the adjacent peak and trough

c: displacement amplitude (A) and period (T) are measured at the time of maximum A

12. Details of measuring period. For example, is it the time between the neighboring peaks, respectively troughs or twice the time span measured between the largest peak and adjacent trough at which the double amplitude has been measured?

Period is it the time between the neighboring peaks, respectively troughs or twice the time span measured between the largest peak and adjacent trough at which the double amplitude has been measured

13. To what part of a phase the amplitude-measurement time refers. For example, is the amplitude-measurement time the time of the zero-crossing associated with a peak-to-adjacent trough measurement or is it the time of an absolute maximum or absolute minimum?

It is the time of an absolute maximum or absolute minimum

For each magnitude type computed at the agency, please specify:

MPVA for deep earthquakes

1. The equations that are used for calculating each magnitude type and

a: specify if distance is measured as epicentral distance or hypocentral distance;

b: specify the distance range for which the equation is applied;

c: specify restrictions on hypocentral focal-depth, if any.

$MPVA = \lg(A/T)max + \sigma(\Delta, h)$

A – SKM simulation amplitude measured in micrometers

T – period measured in seconds

Δ – epicentral distance in degrees, $0.1° \le \Delta \le 19°$

h – focal depth in kilometers

$\Delta°$	$\sigma(\Delta, h)$, 80 km ≤ h ≤ 200 km	$\sigma(\Delta, h)$, 200 km ≤ h
1.2 – 1	4.7	5.0
1.1 – 2	5.0	5.1
2.1 – 3	5.3	5.4

3.1 – 4	5.6	5.5
4.1 – 5	5.8	5.4
5.1 – 6	5.9	5.6
6.1 – 7	5.9	5.6
7.1 – 8	6.1	5.8
8.1 – 9	5.8	6.0
9.1 – 10	6.5	5.9
10.1 – 11	6.1	6.5
11.1 – 12	6.3	5.8
12.1 – 13	6.5	6.2
13.1 – 14	6.4	6.4
14.1 – 15	6.2	6.5
15.1 – 16	6.6	6.6
16.1 – 17	6.6	6.4
17.1 – 18	6.0	6.2
18.1 – 19	–	6.6

2. Is any signal-to-noise ratio criterion applied to the analyzed signal?

No

3. Specify the software used (such as SeisComp, Antelope, Seismic Handler, Seisan, SAC, in-house developed programs) to perform the analyses for magnitude computation.

MGPW, DIMAS

4. If the agency is computing magnitudes not based on some amplitude/period measurement (e.g., moment magnitude Mw) please summarize the details of the technique used. For example, is Mw obtained with a centroid moment tensor, W-phase and/or spectral fitting technique?

No

5. Other restrictions on the calculation of a specific magnitude. For example, is the magnitude measured only for earthquakes of a certain size, as defined by an independent measure of earthquake size? Also, are specific magnitudes computed only for seismic events occurring in specific areas?

No

Detailed questions on the magnitudes based on amplitude/period measurements:

6. How the network (event) magnitude and corresponding uncertainty is obtained? For example, is the network magnitude an arithmetic/trimmed mean, median value of the single station magnitudes?

Arithmetic mean

7. Units of the reported amplitudes. Specify if amplitudes are reported in units of trace-amplitude motion instead of ground motion.

micrometers

8. Time-window in which the amplitude measurement is made for the phase type analyzed. For example, for body wave magnitudes, is the time window a flexible time-interval between the P onset and the PP onset or a

fixed time window after the first P onset (e.g. 5 s, 10 s or other)? Similarly, for the surface wave magnitudes, is the time window considered a time-interval spanned by waves having group-velocities between, e.g., 3.2 and 4.0 km/s or is always the maximum velocity amplitude, respectively (A/T)max in the whole surface-wave train in a wide range of periods be measured? If so, give the range of periods.

Time interval of maximal amplitudes in the whole wave train in a wide range of periods

9. Orientation of seismograph (horizontal or vertical) from which the measurement is made. For example, is Ms computed using both horizontal and vertical components? Specify also if, as for example might be the case for ML, data from each of the two horizontal components at a single station are used, are data from each component treated as a separate observation in the network magnitude computation, or are the two components first averaged into a station magnitude, which is then treated as a single observation in the network magnitude computation?

MPVA is computed for vertical component

10. Describe the amplitude-response, filter characteristics, or transfer-function of the seismograph or simulated seismograph through which the amplitude measurement is made. For example, is the IASPEI recommended standard Wood-Anderson seismometer simulation filter with the parameters according to Uhrhammer and Collins (1990) used to compute ML?

Seismometer of Kirnos simulation (SKM)

11. Details of measuring amplitude:

a: For example, does the amplitude correspond to 0.5*(peak-to-trough amplitude), where “peak-to-trough amplitude” corresponds to difference between a maximum positive excursion and a maximum negative excursion of the trace, or is the amplitude instead measured as the maximum absolute excursion from the “zero” position of the seismograph trace?

b: for example, if the amplitude corresponds to 0.5*(peak-to-trough amplitude), are the “peak” and “trough” respectively the absolute maximum and absolute minimum values of the entire wave-group, or are they the adjacent peak and trough corresponding to the maximum trace excursion that is associated with a single zero-crossing?

c: for example, are displacement amplitude(A) and period(T) measured at the time of maximum A or at the time of the maximum of the quotient (A/T)?

a: amplitude corresponds to 0.5*(peak-to-trough amplitude)

b: they are the adjacent peak and trough

c: displacement amplitude (A) and period (T) are measured at the time of maximum A

12. Details of measuring period. For example, is it the time between the neighboring peaks, respectively troughs or twice the time span measured between the largest peak and adjacent trough at which the double amplitude has been measured?

Period is it the time between the neighboring peaks, respectively troughs or twice the time span measured between the largest peak and adjacent trough at which the double amplitude has been measured

13. To what part of a phase the amplitude-measurement time refers. For example, is the amplitude-measurement time the time of the zero-crossing associated with a peak-to-adjacent trough measurement or is it the time of an absolute maximum or absolute minimum?

It is the time of an absolute maximum or absolute minimum

For each magnitude type computed at the agency, please specify:

MSHA

1. The equations that are used for calculating each magnitude type and

a: specify if distance is measured as epicentral distance or hypocentral distance;

b: specify the distance range for which the equation is applied;

c: specify restrictions on hypocentral focal-depth, if any.

$MSHA = \lg(A/T)max + \sigma(\Delta, h)$

A – SKM simulation amplitude measured in micrometers

T – period measured in seconds

Δ – epicentral distance in degrees, $0.1° \le \Delta \le 11°$

h – focal depth in kilometers, $h \ge 80$ km

$\Delta°$	$\sigma(\Delta, h)$, 80 km ≤ h ≤ 200 km	$\sigma(\Delta, h)$, 200 km ≤ h
1.3 – 1	4.9	5.0
1.1 – 2	5.1	5.5
2.1 – 3	5.4	5.5
3.1 – 4	5.7	5.5
4.1 – 5	6.0	5.9
5.1 – 6	6.1	5.8
6.1 – 7	6.2	6.0
7.1 – 8	6.3	5.8
8.1 – 9	6.4	6.5
9.1 – 10	6.1	5.7
10.1 – 11		5.6

2. Is any signal-to-noise ratio criterion applied to the analyzed signal?

No

3. Specify the software used (such as SeisComp, Antelope, Seismic Handler, Seisan, SAC, in-house developed programs) to perform the analyses for magnitude computation.

MGPW, DIMAS

4. If the agency is computing magnitudes not based on some amplitude/period measurement (e.g., moment magnitude Mw) please summarize the details of the technique used. For example, is Mw obtained with a centroid moment tensor, W-phase and/or spectral fitting technique?

No

5. Other restrictions on the calculation of a specific magnitude. For example, is the magnitude measured only for earthquakes of a certain size, as defined by an independent measure of earthquake size? Also, are specific magnitudes computed only for seismic events occurring in specific areas?

No

Detailed questions on the magnitudes based on amplitude/period measurements:

6. How the network (event) magnitude and corresponding uncertainty is obtained? For example, is the network magnitude an arithmetic/trimmed mean, median value of the single station magnitudes?

Arithmetic mean

7. Units of the reported amplitudes. Specify if amplitudes are reported in units of trace-amplitude motion instead of ground motion.

micrometers

8. Time-window in which the amplitude measurement is made for the phase type analyzed. For example, for body wave magnitudes, is the time window a flexible time-interval between the P onset and the PP onset or a fixed time window after the first P onset (e.g. 5 s, 10 s or other)? Similarly, for the surface wave magnitudes, is the time window considered a time-interval spanned by waves having group-velocities between, e.g., 3.2 and 4.0 km/s or is always the maximum velocity amplitude, respectively (A/T)max in the whole surface-wave train in a wide range of periods be measured? If so, give the range of periods.

Time interval of maximal amplitudes in the whole wave train in a wide range of periods

9. Orientation of seismograph (horizontal or vertical) from which the measurement is made. For example, is Ms computed using both horizontal and vertical components? Specify also if, as for example might be the case for ML, data from each of the two horizontal components at a single station are used, are data from each component treated as a separate observation in the network magnitude computation, or are the two

components first averaged into a station magnitude, which is then treated as a single observation in the network magnitude computation?

MSHA is computed for both horizontal component

10. Describe the amplitude-response, filter characteristics, or transfer-function of the seismograph or simulated seismograph through which the amplitude measurement is made. For example, is the IASPEI recommended standard Wood-Anderson seismometer simulation filter with the parameters according to Uhrhammer and Collins (1990) used to compute ML?

Seismometer of Kirnos simulation (SKM)

11. Details of measuring amplitude:

a: For example, does the amplitude correspond to 0.5*(peak-to-trough amplitude), where “peak-to-trough amplitude” corresponds to difference between a maximum positive excursion and a maximum negative excursion of the trace, or is the amplitude instead measured as the maximum absolute excursion from the “zero” position of the seismograph trace?

b: for example, if the amplitude corresponds to 0.5*(peak-to-trough amplitude), are the “peak” and “trough” respectively the absolute maximum and absolute minimum values of the entire wave-group, or are they the adjacent peak and trough corresponding to the maximum trace excursion that is associated with a single zero-crossing?

c: for example, are displacement amplitude(A) and period(T) measured at the time of maximum A or at the time of the maximum of the quotient (A/T)?

a: amplitude corresponds to 0.5*(peak-to-trough amplitude)

b: they are the adjacent peak and trough

c: displacement amplitude (A) and period (T) are measured at the time of maximum A

12. Details of measuring period. For example, is it the time between the neighboring peaks, respectively troughs or twice the time span measured between the largest peak and adjacent trough at which the double amplitude has been measured?

Period is it the time between the neighboring peaks, respectively troughs or twice the time span measured between the largest peak and adjacent trough at which the double amplitude has been measured

13. To what part of a phase the amplitude-measurement time refers. For example, is the amplitude-measurement time the time of the zero-crossing associated with a peak-to-adjacent trough measurement or is it the time of an absolute maximum or absolute minimum?

It is the time of an absolute maximum or absolute minimum

For each magnitude type computed at the agency, please specify:

K_P (Klass of Rautian)

1. The equations that are used for calculating each magnitude type and

a: specify if distance is measured as epicentral distance or hypocentral distance;

b: specify the distance range for which the equation is applied;

c: specify restrictions on hypocentral focal-depth, if any.

$K_P = \lg E$

E – energy (joules)

Δ – epicentral distance in km, $5 \text{ km} \leq \Delta \leq 1700 \text{ km}$

2. Is any signal-to-noise ratio criterion applied to the analyzed signal?

No

3. Specify the software used (such as SeisComp, Antelope, Seismic Handler, Seisan, SAC, in-house developed programs) to perform the analyses for magnitude computation.

MGPW

4. If the agency is computing magnitudes not based on some amplitude/period measurement (e.g., moment magnitude Mw) please summarize the details of the technique used. For example, is Mw obtained with a centroid moment tensor, W-phase and/or spectral fitting technique?

No

5. Other restrictions on the calculation of a specific magnitude. For example, is the magnitude measured only for earthquakes of a certain size, as defined by an independent measure of earthquake size? Also, are specific magnitudes computed only for seismic events occurring in specific areas?

K_P is computed for the region of Amur and Primorye

Detailed questions on the magnitudes based on amplitude/period measurements:

6. How the network (event) magnitude and corresponding uncertainty is obtained? For example, is the network magnitude an arithmetic/trimmed mean, median value of the single station magnitudes?

Arithmetic mean

7. Units of the reported amplitudes. Specify if amplitudes are reported in units of trace-amplitude motion instead of ground motion.

micrometers

8. Time-window in which the amplitude measurement is made for the phase type analyzed. For example, for body wave magnitudes, is the time window a flexible time-interval between the P onset and the PP onset or a fixed time window after the first P onset (e.g. 5 s, 10 s or other)? Similarly, for the surface wave magnitudes, is the time window considered a time-interval spanned by waves having group-velocities between, e.g., 3.2 and 4.0 km/s or is always the maximum velocity

amplitude, respectively (A/T)max in the whole surface-wave train in a wide range of periods be measured? If so, give the range of periods.

Time interval of maximal amplitudes in the whole wave train in a wide range of periods

9. Orientation of seismograph (horizontal or vertical) from which the measurement is made. For example, is Ms computed using both horizontal and vertical components? Specify also if, as for example might be the case for ML, data from each of the two horizontal components at a single station are used, are data from each component treated as a separate observation in the network magnitude computation, or are the two components first averaged into a station magnitude, which is then treated as a single observation in the network magnitude computation?

K_P is computed for both horizontal and vertical component (A_P+A_S)

10. Describe the amplitude-response, filter characteristics, or transfer-function of the seismograph or simulated seismograph through which the amplitude measurement is made. For example, is the IASPEI recommended standard Wood-Anderson seismometer simulation filter with the parameters according to Uhrhammer and Collins (1990) used to compute ML?

Seismometer of Kirnos simulation (SKM)

11. Details of measuring amplitude:

a: For example, does the amplitude correspond to 0.5*(peak-to-trough amplitude), where “peak-to-trough amplitude” corresponds to difference between a maximum positive excursion and a maximum negative excursion of the trace, or is the amplitude instead measured as the maximum absolute excursion from the “zero” position of the seismograph trace?

b: for example, if the amplitude corresponds to 0.5*(peak-to-trough amplitude), are the “peak” and “trough” respectively the absolute maximum and absolute minimum values of the entire wave-group, or are they the adjacent peak and trough corresponding to the maximum trace excursion that is associated with a single zero-crossing?

c: for example, are displacement amplitude(A) and period(T) measured at the time of maximum A or at the time of the maximum of the quotient (A/T)?

a: amplitude corresponds to 0.5*(peak-to-trough amplitude)

b: they are the adjacent peak and trough

c: displacement amplitude (A) and period (T) are measured at the time of maximum A

12. Details of measuring period. For example, is it the time between the neighboring peaks, respectively troughs or twice the time span measured between the largest peak and adjacent trough at which the double amplitude has been measured?

Period is it the time between the neighboring peaks, respectively troughs or twice the time span measured between the largest peak and adjacent trough at which the double amplitude has been measured

13. To what part of a phase the amplitude-measurement time refers. For example, is the amplitude-measurement time the time of the zero-crossing associated with a peak-to-adjacent trough measurement or is it the time of an absolute maximum or absolute minimum?

It is the time of an absolute maximum or absolute minimum

For each magnitude type computed at the agency, please specify:

K_C (Klass of Solov'ev)

14. The equations that are used for calculating each magnitude type and

a: specify if distance is measured as epicentral distance or hypocentral distance;

b: specify the distance range for which the equation is applied;

c: specify restrictions on hypocentral focal-depth, if any.

$K_C = \lg E$

E – energy (joules)

Δ – epicentral distance in km, $40 \text{ km} \leq \Delta \leq 700 \text{ km}$

15. Is any signal-to-noise ratio criterion applied to the analyzed signal?

No

16. Specify the software used (such as SeisComp, Antelope, Seismic Handler, Seisan, SAC, in-house developed programs) to perform the analyses for magnitude computation.

MGPW, DIMAS

17. If the agency is computing magnitudes not based on some amplitude/period measurement (e.g., moment magnitude Mw) please summarize the details of the technique used. For example, is Mw obtained with a centroid moment tensor, W-phase and/or spectral fitting technique?

No

18. Other restrictions on the calculation of a specific magnitude. For example, is the magnitude measured only for earthquakes of a certain size, as defined by an independent measure of earthquake size? Also, are specific magnitudes computed only for seismic events occurring in specific areas?

K_C is calculated for the region of Sakhalin, the Kuril Islands and the Sea of Okhotsk

Detailed questions on the magnitudes based on amplitude/period measurements:

19. How the network (event) magnitude and corresponding uncertainty is obtained? For example, is the network magnitude an arithmetic/trimmed mean, median value of the single station magnitudes?

Arithmetic mean

20. Units of the reported amplitudes. Specify if amplitudes are reported in units of trace-amplitude motion instead of ground motion.

micrometers

21. Time-window in which the amplitude measurement is made for the phase type analyzed. For example, for body wave magnitudes, is the time window a flexible time-interval between the P onset and the PP onset or a fixed time window after the first P onset (e.g. 5 s, 10 s or other)? Similarly, for the surface wave magnitudes, is the time window considered a time-interval spanned by waves having group-velocities between, e.g., 3.2 and 4.0 km/s or is always the maximum velocity amplitude, respectively (A/T)max in the whole surface-wave train in a wide range of periods be measured? If so, give the range of periods.

Time interval of maximal amplitudes in the whole wave train in a wide range of periods

22. Orientation of seismograph (horizontal or vertical) from which the measurement is made. For example, is Ms computed using both horizontal and vertical components? Specify also if, as for example might be the case for ML, data from each of the two horizontal components at a single station are used, are data from each component treated as a separate observation in the network magnitude computation, or are the two components first averaged into a station magnitude, which is then treated as a single observation in the network magnitude computation?

MSHA is computed for both horizontal component

23. Describe the amplitude-response, filter characteristics, or transfer-function of the seismograph or simulated seismograph through which the amplitude measurement is made. For example, is the IASPEI recommended standard Wood-Anderson seismometer simulation filter with the parameters according to Uhrhammer and Collins (1990) used to compute ML?

Seismometer of Kirnos simulation (SKM)

24. Details of measuring amplitude:

a: For example, does the amplitude correspond to 0.5*(peak-to-trough amplitude), where “peak-to-trough amplitude” corresponds to difference between a maximum positive excursion and a maximum negative excursion of the trace, or is the amplitude instead measured as the maximum absolute excursion from the “zero” position of the seismograph trace?

b: for example, if the amplitude corresponds to 0.5*(peak-to-trough amplitude), are the “peak” and “trough” respectively the absolute

maximum and absolute minimum values of the entire wave-group, or are they the adjacent peak and trough corresponding to the maximum trace excursion that is associated with a single zero-crossing?

c: for example, are displacement amplitude(A) and period(T) measured at the time of maximum A or at the time of the maximum of the quotient (A/T)?

a: amplitude corresponds to 0.5*(peak-to-trough amplitude)

b: they are the adjacent peak and trough

c: displacement amplitude (A) and period (T) are measured at the time of maximum A

25. Details of measuring period. For example, is it the time between the neighboring peaks, respectively troughs or twice the time span measured between the largest peak and adjacent trough at which the double amplitude has been measured?

Period is it the time between the neighboring peaks, respectively troughs or twice the time span measured between the largest peak and adjacent trough at which the double amplitude has been measured

26. To what part of a phase the amplitude-measurement time refers. For example, is the amplitude-measurement time the time of the zero-crossing associated with a peak-to-adjacent trough measurement or is it the time of an absolute maximum or absolute minimum?

It is the time of an absolute maximum or absolute minimum