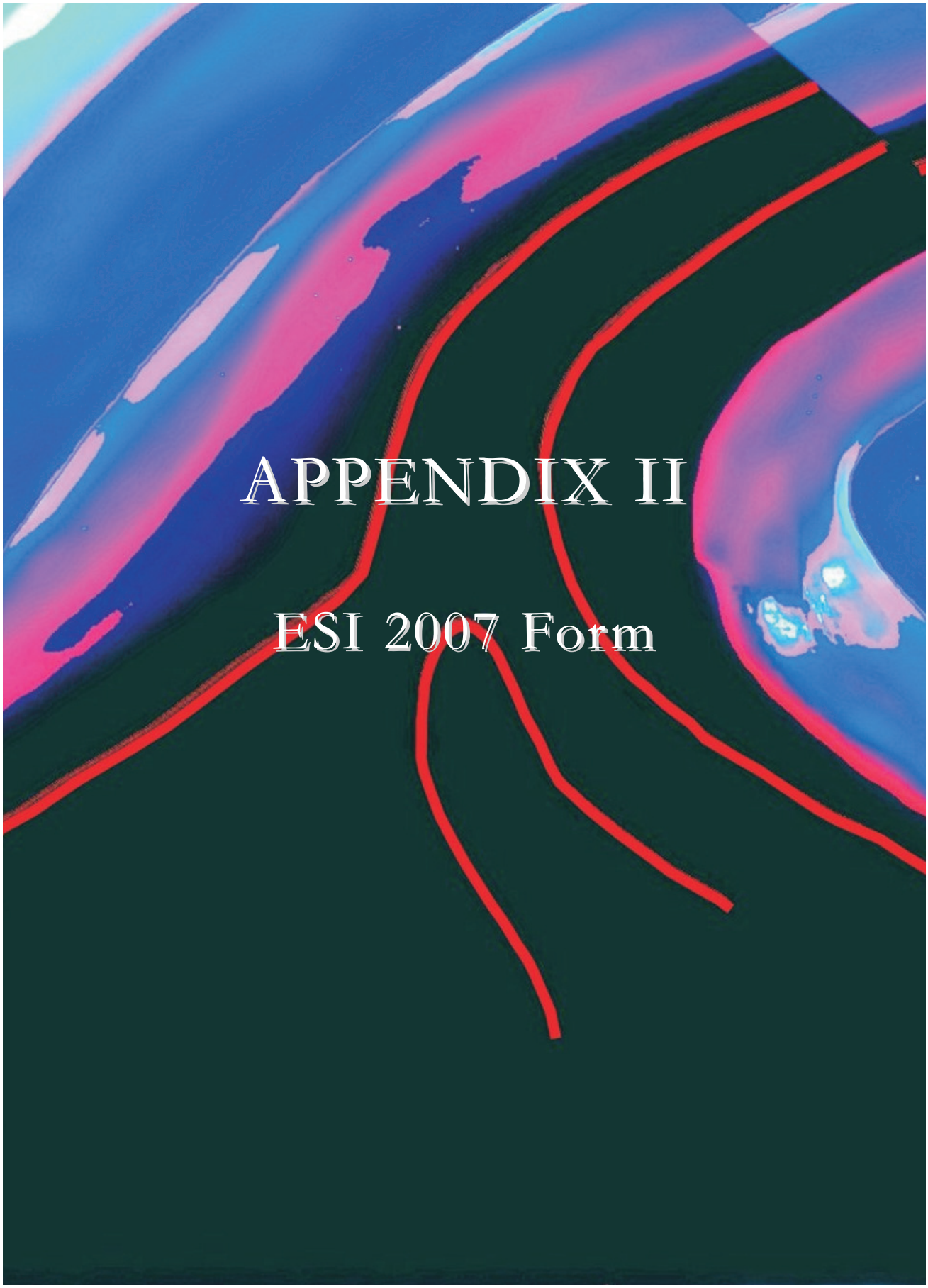
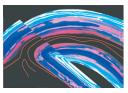


APPENDIX II

ESI 2007 Form



ESI 2007 Form

This 2 pages - form has to be used for field surveys immediately after the earthquake and for the revision of environmental effects from historical sources. It is designed at the site level (one different form for each different site).
Fields in *Italic* should be filled when required information is available.
A complete Guide to Compilation is available at the end of this Form.

Authors & Institution

1. _____
2. _____
3. _____
4. _____
5. _____

Earthquake

Earthquake Code _____ Earthquake Region _____

Year_____ Month _____ Day_____ Greenwich Time_____Epicentral Intensity_____ Intensity type_____

Magnitude_____ Magnitude type_____ Focal Depth (km) _____ Depth accuracy_____

Latitude _____ Longitude_____Earthquake References_____

Surface faulting (yes/not): _____ *Map of rupture zone (available / not available)* _____

Maximum Displacement (cm) _____*Total Rupture Length (km)*_____ *Slip-sense* _____

*Surface faulting References*_____

Area of max secondary effects (kms) _____ *Reference for secondary effects* _____

ESI epicentral intensity assessment _____

Locality

Locality Code_____ EEE-Survey Date _____ Surveyors _____

Locality _____ Town/District_____ Locality length (m) _____ Locality width (m) _____

Latitude _____ Longitude _____ Altitude (m) _____ Location accuracy _____

Distance from epicentre (km) _____ Local PGA (g) _____ Geomorphological setting_____

Local Macroseismic Intensity _____ **Intensity type**_____

EEE site

EEE Code_____ EEE type_____ Site length (m) _____ Site width (m) _____

Site position _____Latitude _____ Longitude _____ Altitude (m) _____ Loc. accuracy _____

Description _____

Notes on the site _____

Bedrock lithology_____ Soft sediment lithology _____

Strength_____ Structure_____

EEE Site References _____

Effects on man-made structures

Type of man-made structures _____

Level of damage _____ Single/multiple _____

Surface faulting

Strike (°) _____ Dip (°) _____ Slip vector (°) _____ Type of movement_____

Vertical Offset (cm) _____ Horizontal Offset (cm) _____ Displaced features _____

Length of fault segment (km) _____ Scarp _____ Associated features:_____

Hydrologic anomalies

Surface water effects_____ Ground water effects_____

Temperature Anomaly ☐ Temperature change (°C) _____ Discharge anomaly ☐ Discharge change (l/s)_____

Chemical anomaly Change chemical components_____ Gas emission ☐ Gas element _____

Duration of anomaly (days) _____ Time delay (hrs) _____ Velocity_____

Anomalous waves/tsunami

Max wave height (m) _____ Width (m) _____ Length of affected coast (km) _____ Time delay (min) _____

Description_____

Ground cracks

Origin_____ Strike (°) _____ Dip (°) _____ Areal density (Nr/m^2) _____

Shape_____ Max opening (cm) _____ Length (m) _____

Slope movements

Type_____ Max dimension of blocks (m^3) _____Total volume (m^3)_____

Linear density (Nr/m) _____ Areal density (Nr/m^2) _____ Humidity_____

Time delay (hrs) _____ Width (m) _____ Slip amount (m) _____

Liquefactions

Type_____ Max diameter (m) _____ Linear density (Nr/m) _____

Areal densit y (Nr/m^2) _____ Max lowering/uplift (m) _____ Shape _____

Humidity_____ Depth of water table (m) _____ Water ejection ☐ Sand ejection ☐

Velocity _____ Time delay/advance (hrs) _____

Other effects

Three shaking ☐ Dust clouds ☐ Jumping stones ☐ Other_____

Description_____

Sketch

ESI local intensity assessment _____

ESI 2007 Form - Guide to Compilation

Authors & Institution: List of the authors of this form (Surname, First Name, Institution, Country).

Earthquake

Earthquake Code: it is the primary key (univocal) for the table "Earthquake" It is composed by 11 digits:

- 2 digits for country code for Regional Working Group (i.e. GR for Greece) that can be different from the country of epicentre;
- 8 digits for date (yyyymmdd);
- 1 digit according to the type of shock (m = main shock; a = aftershock; f = foreshock).

Earthquake Region: "epicentral area, country" or "name of the earthquake" (i.e. San Francisco, California, US);

Year, Month & Day: the date of the event. Please specify if it original date or converted date.

Greenwhich Time: when available, please specify.

Epicentral Intensity & Intensity type: MCS= Mercalli, Cancani, Sieberg; MM = Modified Mercalli intensity; EMS98 = European Macroseismic Scale; MSK64 = Medvedev, Sponhauer, Karnik; JMA = Japanese Meterological Agency-Intensity Scale. If you do not know the intensity type, please select "Not identified".

Magnitude & Magnitude type: select from the menu (Ml / Mb / M / Ms / Md/ Mw / MbLg / Mm).

Focal Depth & Depth accuracy: in km.

Latitude, Longitude & datum: two numerical fields for the coordinates of the epicentre. Datum must be WGS84.

Earthquake References: the Agency providing source parameters and/or a list of data source for the earthquake.

Surface faulting: YES or NOT, according to the SF reference cited below. If there is no information about surface faulting, please select "Unknown".

Map of rupture zone: click the option if it is available.

Max D & SRL: maximum displacement (in cm) and Surface Rupture Length (in km) of the rupture zone.

Slip-sense: choose the option (normal/reverse/oblique/right-lateral/left-lateral).

Surface faulting References: the data source for surface faulting parameters (published paper and/or a personal observation).

Area of maximum secondary effects: the size (in km^2) of the area where maximum secondary effects occurred.

SecEff References: references for the definition of the area of maximum secondary effects.

ESI epicentral intensity: epicentral intensity assessment based on EEE effects at the total affected area level.

Locality

Locality Code: it is the primary key (univocal) for the table "Locality", composed by the first 8 digits of the locality name (truncated). Es: SANFRANC.

EEE-Survey Date: when the EEE effects of this locality have been described.

Surveyors: the list of surveyors.

Length & Width: the size of locality in meters.

Locality and Town/District: the name of the locality and the closest town/district.

Latitude, Longitude, Altitude & Location accuracy: the coordinates and the elevation (m) of the centroid of locality area. Accuracy in km.

Distance from epicentre: in km.

Local PGA: peak ground acceleration data (in g), when available.

Geomorphological setting: select a geomorphological environment from the list (Mountain slope /Mountain valley/Hillslope/Alluvial fan/Bajada/Delta/Alluvial plain/Alluvial terrace/Marsh/Sea-river cliff/River-lake bank/Sea-lake shore/Arid-semiarid flat/Desert).

Local Macroseismic Intensity: local intensity values according to classical traditional scales (do not confuse with ESI intensity!!).

EEE site

EEE Code: it is the primary key (univocal) for the table "EEE Effects", composed by 11 digits (8 digits of locality code + 1 + 2 digits for counter). Es: SANFRANC101. If another earthquake recorded in this database has hit the same locality you should insert 2 (instead of 1) between the 8 digits for locality code and the 2 digits for counter). Es. SANFRANC201.

Site position: describe the position of the site within the locality (50 digits).

Length & Width: the size of site in meters.

Latitude, Longitude, Altitude & Location accuracy: the coordinates and the elevation (m) of the EEE site. Accuracy in m.

Description: a description of the effect as reported by the original observer (essential for historical earthquakes). In this field you should include description of the evolution in time of the effect.

Notes: any additional information on the site.

Bedrock lithology: select from the menu (Intrusive/Volcaniclava/Pyroclastic/Metamorphic/Shale/Sandstone/Conglomerate/Limestone/Salt).

Soft sediment lithology: select from the menu (Soil/Clay/Silt/Sand/Gravel).

Strength: select from the menu (hard/semi-coherent/soft).

Structure: select from the menu (massive/stratified/densely cleaved).

EEE Site References: cite the document supporting the EEE description.

EEE type: select the dominant type of EEE effect in this site: Surface faulting - Slope movements - Ground cracks - Ground settlements - Hydrological anomaly – Tsunami - Not geological effects.

Effects on man-made structures

Type of man-made structure: select from the menu (Buildings/Bridge/Viaduct/Railway/Tunnel/Paved road/Unimproved road/Highway).

Level of damage: select from the menu (partially damaged/collapsed).

Single/Multiple: choose the option.

Surface faulting

Strike, Dip & Slip vector: in degrees.

Slip sense: . it can be different from the general trend of movement. Select from the list (normal/reverse/oblique/strike-slip dextral/ strike-slip sinistral).

Vertical Offset & Horizontal Offset: in cm.

Displaced features: type the displaced features (i.e. alluvial fan deposits, limestone, erosional terrace, etc.);

Length of fault segment: in km.

Scarp: select single/multiple.

Associated features: select from the menu (Gravity graben/Push-up/Pull-a-part/Mole track).

Hydrologic anomalies

Surface water effects: select from the menu (Surface waters effects/Overflow/Waves/Water fountain/Discharge variation/ Turbidity of river/Seiches/Temporary sea-level change/Temporary lake-level change).

Ground water effects: select from the menu (Drying up of springs/Appearance of springs/Temperature/Chemical component/ Turbidity of springs).

Temperature Anomaly &Temperature change: in case, click the option and estimate the change in °C.

Discharge anomaly & Discharge change: in case, click the option and estimate the change in l/s

Chemical anomaly & Change chemical components: in case, click the option and record the anomalous chemical component.

Gas emission & Gas element: in case, click the option and record the anomalous gas element.

Duration of anomaly: in days.

Time delay: in hours.

Velocity: select from the menu (Extremely slow/Very slow/Slow/Moderately rapid/Rapid).

Anomalous waves / Tsunami

Max wave height: in meters.

Width: the width of inundated land from the coast to the inner land, in meters.

Length of affected coast: in km.

Time delay: in minutes.

Ground cracks

Origin: select from the menu (slide/ground settling/detachment/ground shaking).

Strike & Dip: in degrees.

Areal density: Nr/m^2.

Shape: select from the menu (straight/Sinuous/Curvilinear/Max opening).

Max opening: in cm.

Length: in meters.

Slope movements

Type: select from the menu (Rock fall/Debris fall/Toppling/Rock slide/Debris slide/Avalanche/Mudslide/Debris flow/ Earth flow/Mud flow/Slow slide/Slow earth flow/Slow mud flow/Lateral spread/Sackung).

Max dimension of blocks: in cubic meters.

Total volume: in cubic meters.

Linear density & Areal density: in Nr/m and in Nr/m^2.

Humidity: select from the menu (very wet/moderately wet/dry).

Time delay: in hours.

Width: the width of the sliding material (along the slope) in m.

Slip amount: approximately, the amount of slip in m.

Liquefactions

Type: select from the menu (Liquefaction/Compaction/Subsidence/Bulge/Sinkhole/Ground failure)

Max diameter: in meters

Linear density & Areal density: Nr/m and Nr/m^2

Max lowering/uplift: in meters

Shape: select from the menu (Round/Elliptical/Elongated/Squared positive cone / Squared negative cone)

Humidity: select from the menu (Very wet/Moderately wet/Dry)

Depth of water table: in meters.

Water ejection & Sand ejection: in case, click the option

Velocity: select from the menu (Extremely slow/Very slow/Slow/Moderately rapid/Rapid)

Time delay/advance: in hours

Other effects

Select the type of effect

Description: add detailed characteristics of the effect

ESI local intensity assessment

The final assessment of local intensity on the basis of the ESI 2007