# Supplementary Information 1

A list of localities and evaluated intensity degrees used to generate the iso-seismals is presented in Fig. 2. Table SP 1.1 relates to macroseismic effects (EMS-98), Table SP 1.2 to environmental effects (ESI-2007), and Table SP 1.3 to tsunami effects (PI-2001). The columns include the following: **ID** – Sequential identification of the locations; **X, Y** – longitude and latitude (in geographic coordinate reference system); **Effect\_Damage** – textual description of the resulting damage or effect; **Intensity** (whether EMS-98, ESI-2007 or PI-2001); **Intensity\_Numeric** – numeric value of the evaluated intensity degree; **Reliability\_Uncertainty** – the level of reliability attributed to the historical report (P: Poor, L: low, M: moderate, H: High); **Comments** – comments and remarks of the given entry.

The data in the three tables below also appear in the interactive map, containing the EMS-98, ESI-2007 and PI-2001 effects and intensity degrees attributed to each of the locations (<https://univhaifa.maps.arcgis.com/apps/mapviewer/index.html?webmap=8cc9413e9b304145a22122008df1599c>). Clicking on any objects on the map provides an information table that contains the following GIS information: ObjectID – Internal code; ID – Locality Id; Location – Geographic description of the region; Coordinates – DMS coordinates; Lon – Longitude; Lat – Latitude; Effect/Damage – The effect description; EMS-98 Intensity – Intensity degree; Reliability – Reliability of the reported effect/damage; Comments; EMS-98 Numeric – Intensity degree in numbers; ESI-2007 Intensity; Range of uplift; PI-2001 intensity. The map also contains the two iso-seismals sets presented in Figure 2. The field Intensity\_class represents the adjacent iso-seismal.

**Table SP 1.1** Evaluated intensities of macroseismic effects (EMS-98) associated with the 551 event

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ID** | **Location** | **X** | **Y** | **Effect/Damage** | **EMS-98\_ Intensity** | **EMS-98\_Numeric** | **Reliability\_\_\_Uncertainty** | **Comments** |
| 1 | Along the littoral of Galilee and Phoenice Maritima (i.e. Tripoli to Acre): Central Galilee littoral: | 33 | 35.08333333 | Towns and villages on the coast were ruined by two successive earthquakes | > IX | 9 | M | General description |
| 2 | Along the littoral of Galilee and Phoenice Maritima (i.e. Tripoli to Acre): Tripoli: | 34.45 | 35.8 | Towns and villages on the coast were ruined by two successive earthquakes | > IX | 9 | M | General description |
| 3 | Aradus Island (Antharidus, Arwad) | 34.85 | 35.85 | Aradus - probably felt | > III | 3 | H | Many people were killed; many cities of the Phoenician littoral collapsed, … and multitudes of men were crushed in these cities... with their livestock and everything else |
| 4 | Tripolis | 34.45 | 35.8 | Tripoli - collapsed | > IX | 9 | H | Many people were killed; many cities of the Phoenician littoral collapsed, … and multitudes of men were crushed in these cities... with their livestock and everything else |
| 5 | Trieris (Shikka, Shaqa) | 34.33333333 | 35.73333333 | Shaqa - ruined, collapsed | > IX | 9 | H | Many people were killed; many cities of the Phoenician littoral collapsed, … and multitudes of men were crushed in these cities... with their livestock and everything else |
| 6 | Botrys (Batroun) | 34.25 | 35.66666667 | Batroun - collapsed | > IX | 9 | H | Many people were killed; many cities of the Phoenician littoral collapsed, … and multitudes of men were crushed in these cities... with their livestock and everything else |
| 7 | Byblus | 34.11666667 | 35.65 | Byblus - collapsed | > IX | 9 | H | Many people were killed; many cities of the Phoenician littoral collapsed, … and multitudes of men were crushed in these cities... with their livestock and everything else |
| 10 | Sarepta (Sarfand)  | 33.45 | 35.3 | Sarfand - ruined in part? | > VII-VIII | 8 | H | Many people were killed; many cities of the Phoenician littoral collapsed, … and multitudes of men were crushed in these cities... with their livestock and everything else |
| 11 | Tyrus (Troy, Tyro, Sur) | 33.26666667 | 35.2 | Tyr - ruined | > IX | 9 | H | Many people were killed; many cities of the Phoenician littoral collapsed, … and multitudes of men were crushed in these cities... with their livestock and everything else |
| 12 | Beirut | 33.9 | 35.5 | Worst hit and badly damaged by the earthquake and a sea wave; At least 30 000 people died in Beirut,  | > IX | 9 | H | Beirut was a central hub, thus the damage is more detailed and appears worse than elsewhere. The ensuing fire increased the damage and confuse intensity evaluation; Many people were killed; “many cities of the Phoenician littoral collapsed, … and multitud |
| 13 | Sidon | 33.55 | 35.36666667 | “…which cannot therefore have been badly damaged…” i.e. ruined in part | > VII-VIII | 8 | H | Many people were killed; “many cities of the Phoenician littoral collapsed, … and multitudes of men were crushed in these cities... with their livestock and everything else” |
| 14 | 101 towns/villages in Lebanon (assumed between Tyre and Tripoli | 33.26666667 | 35.18333333 | Were affected | > VI [appeared prev.] | 6 | M | Around the affected littoral cities, but no mention of the exact location |
| 15 | 101 towns/villages in Lebanon (assumed between Tyre and Tripoli | 34.45 | 35.8 | Were affected | > VI [appeared prev.] | 6 | M | Around the affected littoral cities, but no mention of the exact location |
| 16 | Between Laodicea: and Antioch: | 35.53333333 | 35.78333333 | Everything except ‘a few towers of city walls, and church walls’ remained standing and the southern region were likewise preserved’.  | > VI | 6 | H |  |
| 17 | Between Laodicea: and Antioch: | 36.2 | 36.36666667 | Everything except ‘a few towers of city walls, and church walls’ remained standing and the southern region were likewise preserved’.  | > VI | 6 | H |  |
| 18 | The area from south of Tyre: | 33.2 | 35.2 | Everything except ‘a few towers of city walls, and church walls’ remained standing and the southern region were likewise preserved’.  | > VI | 6 | H |  |
| 19 | to north of Jerusalem | 31.83333333 | 35.16666667 | Everything except ‘a few towers of city walls, and church walls’ remained standing and the southern region were likewise preserved’.  | > VI | 6 | H |  |
| 20 | Jerusalem | 31.78333333 | 35.23333333 | There is no evidence that Jerusalem was affected | - | 4 | P | Intensity degree cannot be determined |
| 21 | Alexandria | 31.2 | 29.88333333 | A very slight tremor was perceived, although it was very weak and not widely felt.  | III | 3 | H | Then in Alexandria the Great too, which is situated on the River Nile, a place unaccustomed to earthquakes |
| 22 | Antioch: | 36.2 | 36.36666667 | Felt | > III | 4 | H | The coordinates relate to the assumed region |
| 23 | Palestine: | 31.75 | 34.75 | Felt | > III | 4 | H | The coordinates relate to the assumed region |
| 24 | Arabia(East of the Jordan River): | 31.75 | 35.83333333 | Felt | > III | 4 | H | The coordinates relate to the assumed region |
| 25 | Mesopotamia: | 34.5 | 42.5 | Felt | > III | 4 | H | The coordinates relate to the assumed region |
| 26 | Cyprus, Rhodes, the hinterland to the north and the east | It is rather strange that there is no information from Cyprus, Rhodes and, in particular, the hinterland to the north and the east, where the earthquake should have been quite strong | - | 3 | P | No information: may be interpreted as intensity I, or just lack of data which means that intensity degree cannot be determined |

**Table SP 1.2** Evaluated intensities of environmental effects (ESI-2007) associated with the 551 event

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ID** | **Location** | **X** | **Y** | **Range\_of\_Uplift\_\_rounded\_\_in\_cm** | **ESI-2007 \_Intensity** | **ESI\_2007\_Numeric** | **Reliability\_\_\_Uncertainty** | **Comments** |
| 27 | Lithoprosopon (Ras al-Shaqqa), Botrys coast | 35.7 | 34.3 | Subaerial landslide | X | 10 | H | Evaluation of historical accounts (e.g. Elias, 2006; Ambraseys, 2009; and others)  |
| 28 | Not specified, but is inferred to be around the damaged area between Tripoli to Tyre | 35.18333333 | 33.26666667 | … the mountains were uprooted and cloven with force; and fissures opened in the ground in diverse places | > VIII | 8 | L | By association and elimination, the affected area is around the damaged area |
| 29 | Not specified, but is inferred to be around the damaged area between Tripoli to Tyre | 35.8 | 34.45 | … the mountains were uprooted and cloven with force; and fissures opened in the ground in diverse places | > VIII | 8 | L | By association and elimination, the affected area is around the damaged area |
| 30 | Tripoli Islands | 35.75 | 34.5 | 60-110 | IX | 9 | L |  |
| 31 | Hannouch, Near the promontory of Ras Chekka | 35.66666667 | 34.3 | 0/20 - 60 | IX | 9 | L |  |
| 32 | Madfoun | 35.65 | 34.21666667 | 80 - 110 | IX | 9 | L |  |
| 33 | Fidar | 35.65 | 34.1 | 50 | IX | 9 | L |  |
| 34 | Tabarja | 35.61666667 | 34.03333333 | 50 –120 | IX | 9 | L |  |
| 35 | Saida | 35.36666667 | 33.56666667 | 50 | IX | 9 | L |  |
| 36 | Ras Qantara | 35.3 | 33.46666667 | 50 | IX | 9 | L |  |
| 37 | Ras Abou Zeid | 35.25 | 33.4 | 70 | IX | 9 | L |  |
| 38 | Khaizerane | 35.26666667 | 33.38333333 | 40 | IX | 9 | L |  |
| 39 | Tyre | 35.16666667 | 33.26666667 | 0 | I | 1 | L |  |
| 40 | Offshore Batroun | 35.56666667 | 34.25 | Length: ~ 3 km | X | 10 | L |  |
| 41 | Offshore Jounieh | 35.48333333 | 33.98333333 | Length: ~ 3 km | X | 10 | L |  |
| 42 | Offshore Beirut | 35.36666667 | 33.98333333 | Length: ~ 20 km | XI | 11 | L |  |
| 43 | Offshore Damour | 35.35 | 33.76666667 | Length: ~ 4 km | X | 10 | L |  |
| 44 | Phoenicia coast: Tyre to Tripoli | 35.18333333 | 33.26666667 | Tsunami | > IX | 9 | L | The coast in between Tyre and Tripoli |
| 45 | Phoenicia coast: Tyre to Tripoli | 35.8 | 34.45 | Tsunami | > IX | 9 | L |  |
| 46 | Ancient Beirut harbor | 35.51666667 | 33.9 | Scouring (see Table 3) | > IX | 9 | L | Marriner et al. (2008) after Curvers and Stuart (2004) |
| 47 | Caesarea | 34.88333333 | 32.5 | Tsunamite, assumed | > VIII | 8 | L | Goodman-Tchernov et al. (2009), Dey et al. (2014) |
| 48 | Qiryat Shemona | 35.56 | 33.2 | Rockfalls, Volume of 25-41 M3 | ≥  VI | 6 | L |  |
| 49 | Ein Feshkha | 35.45 | 31.66 | Seismites | ≥  V | 5 | L |  |
| 50 | Ein Gedi | 35.39 | 31.45 | Seismites | ≥  V | 5 | L |  |
| 51 | Ze'elim Gully | 35.4 | 31.33 | Seismites | ≥  V | 5 | L |  |

**Table SP 1.3** Evaluated intensities of tsunami effects (PI-2001) associated with the 551 event

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ID** | **Location** | **Lon** | **Lat** | **Effect** | **PI-2001 \_Intensity** | **PI-2001\_Numeric** | **Reliability** | **Comments** |
| 52 | Phoenicia coast (Tripoli) | 33.26666667 | 35.18333333 | Tsunami | > VIII | 8 | M | The sea receded for many hours by one to two miles and got back.  |
| 53 | Phoenicia coast (Tyre) | 34.45 | 35.8 | Tsunami | > VIII | 8 | M | The sea receded for many hours by one to two miles and got back.  |
| 54 | All Phoenician coast or Just in Beirut (Tyre) | 33.26666667 | 35.18333333 | Casualties: 30,000 people were drowned… | > IX | 9 | M | Ambraseys (2009): grossly exaggerated figure given for Beirut alone |
| 55 | All Phoenician coast or Just in Beirut (Tripoli) | 34.45 | 35.8 | Casualties: 30,000 people were drowned… | > IX | 9 | M | Ambraseys (2009): grossly exaggerated figure given for Beirut alone |
| 56 | All Phoenician coast or Just in Beirut (just in Beirut) | 33.9 | 35.51666667 | Casualties: 30,000 people were drowned… | > IX | 9 | M | Ambraseys (2009): grossly exaggerated figure given for Beirut alone |
| 57 | Caesarea | 34.5 | 32.88333333 | Tsunamite, assumed | > VIII | 8 | L | Goodman-Tchernov et al. (2009), Dey et al. (2014) |