

S1.1: Pisco-province informants

Description of the observations reported by interviewees during the 2007 Pisco earthquake

No.	Code ¹	Sector	Geographical reference
1	M52 EP-01	San Andrés	0.8 km south of H-01
2	M77 EP-02	Morón Lagoon	On the eastern edge of H-06
3	F30 EP-03	Los Álamos	2.8 km north of H-04
4	M39 EP-04	Costa Rica	1.0 km north of H-04
5	M67 EP-05	Costa Rica	1.0 km east of H-03
6	M86 EP-06	Costa Rica	0.2 km east of H-03
7	M84 EP-07	Costa Rica	Within H-03
8	F77_EP-08	La Yesera	3.5 km east of H-01 and 3.5 km west of H-02, at the northern boundary of the Pozo Hediondo wetland
9	F69_EP-09	La Yesera	3.5 km east of H-01 and 3.5 km west of H-02, 0.3 km north of the Pozo Hediondo wetland
10	M77_EP-10	La Yesera	3.5 km east of H-01 and 3.5 km west of H-02, 0.4 km north of the Pozo Hediondo wetland
11	M53 EP-11	Morón Lagoon	Within H-06
12	M72 EP-12	Fronton Lagoon	3.0 km northwest of H-03
13	M67 EP-13	Fronton Lagoon	2.5 km north of H-03
14	M75 EP-14	Los Álamos	2.7 km north of H-04
15	M44 EP-15	Los Álamos	4.0 km northeast of H-04
16	M65 EP-16	Bellavista	1.5 km southwest of H-02
17	F60 EP-17	Bellavista	In the northern part of wetland H-02
18	M66 EP-18	Bellavista	In the southern part of wetland H-02
19	M88 EP-19	Bellavista	0.9 km northwest of wetland H-02
20	M34 EP-20	Pampa de Ocas	2.5 km northwest of wetland H-02
21	M65 EP-21	Pampa de Ocas	2.0 km northwest of wetland H-02
22	F65_EP-22	La Yesera	2.1 km east of the southern end of wetland H-01
23	F88_EP-23	San Andrés	0.8 km southeast of the southern end of H-01
24	F37_EP-24	La Yesera	2.4 km east of the southern end of wetland H-01

¹ The Code represents the following:

1 = Gender and age of the informant. M: Male; F: Female

2 = It is the code assigned to a person an interview at a point, which can be seen in the legend as "Interviews" in figures 4 and 5.

Section S1.2: Semi-structured interviews

In the semi-structured interviews on the impacts of liquefaction in the coastal wetlands of Pisco, several aspects were considered to assess the effects of the 2007 earthquake. The survey began with basic information such as the date, time, name, and age of the respondent, followed by specific questions about observed phenomena, including ground subsidence (indicating depth), sand and water ejection, flooding, cracking (specifying width), uplift, drought, or other effects, with the goal of gathering detailed information on the physical manifestations of liquefaction. Open-ended questions were also included to explore participants' perceptions and experiences, addressing what happened to the soil during the earthquake, the prior existence of wetlands in the area and their possible alteration through drainage, burning, filling, or construction, recollections of previous major earthquakes, and actions taken afterward, including potential support from entities such as municipalities. This approach provided a more comprehensive understanding of the historical context, mitigation efforts, and institutional involvement in the recovery of affected soils.

1. Did you observe any of the following soil liquefaction effects during the 2007 earthquake?

- Ground subsidence
- Sand and water ejection
- Flooding
- Ground cracking
- Uplift
- Drought

* Please describe the depth, width, length, or any other relevant characteristics.

2. Open questions

- What happened to the ground when the 2007 earthquake occurred?
- Was there previously a wetland in this area?
- Was that wetland drained, burned, filled, or built over?
- Do you recall any other major earthquakes that occurred in the past?
- What measures were taken afterward in the affected soils? Did any institution provide assistance?

S1.3: Illustrative testimonies from the informants

Testimonies about the observations during the Pisco seismic event or some hours after

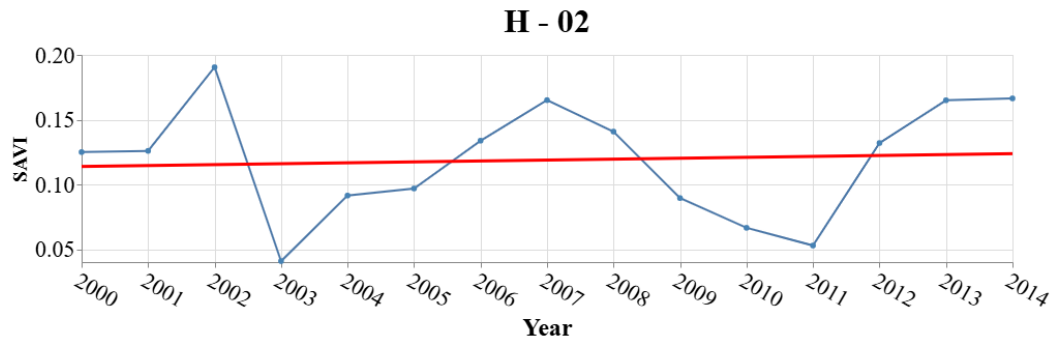
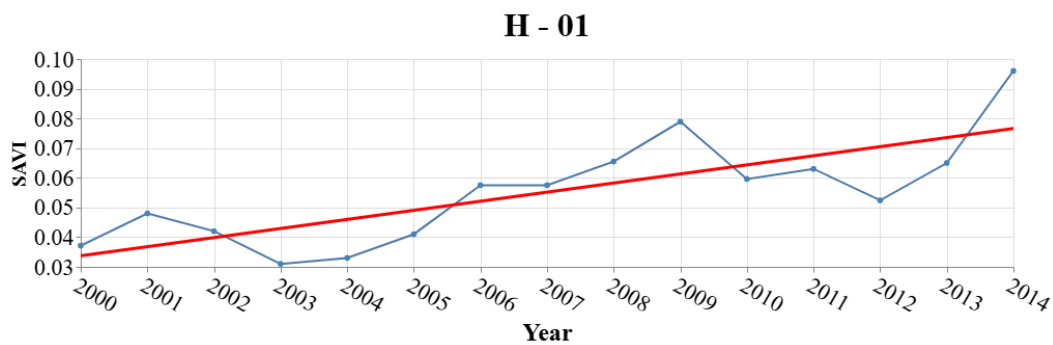
Informant code	Testimony (in Spanish)	Identificación cualitativa de las características descritas English
M52_EP-01		
M77_EP-02	Agrietamiento de hasta 50 cm de ancho durante el sismo. Expulsión de agua color marrón oscuro. Inundación.	Cracking up to 50 cm wide during the earthquake. Expulsion of dark brown water. Flooding.
F30_EP-03	Los árboles de la zona se ladearon y el suelo se levantó. Agrietamientos de hasta 10 cm de ancho. Hundimientos de terreno de hasta 1 m. Se menciona que el humedal cercano fue desecado, drenado.	The trees in the area tilted and the ground heaved. Cracking up to 10 cm wide. Settlement of the ground up to 1 m. It is mentioned that the nearby wetland was desiccated/draind.
M39_EP-04	“Reventó el suelo”, se levantó y agrietó. Expulsión de agua y lodo negro. Hundimientos de hasta 15 cm. Agrietamientos de hasta 20 cm de ancho. Antes existió un humedal en esta zona.	"The ground burst", it heaved and cracked. Expulsion of black water and mud. Settlement up to 15 cm. Cracking up to 20 cm wide. A wetland existed in this area before.
M67_EP-05	Hundimientos de hasta 30 cm. Agrietamientos de 10 cm de ancho y 20 m de largo. Aumentó la vegetación del humedal. Zona de antiguo humedal, que fue drenado con fines de conversión agrícola.	Settlement up to 30 cm. Cracking 10 cm wide and 20 m long. The wetland's vegetation increased. Area of a former wetland, which was drained for agricultural conversion.
M86_EP-06	Se cayó una casa de adobe. Hubo hundimientos, menores a 1m. Agrietamientos de 15 cm de ancho.	An adobe house collapsed. There was settlement, less than 1m. Cracking 15 cm wide.
M84_EP-07	Expulsión de arena y agua, en cantidades bastante apreciables. Volcanes de arena. Levantamientos de terreno, de 50 cm en promedio. Zona de humedales en relictos todavía. Desaparecieron las acequias. Los árboles tumbados. Grietas en los caminos. EL humedal principal fue drenado con fines de conversión agrícola.	Expulsion of sand and water, in quite considerable amounts. Sand boils. Ground heaving, averaging 50 cm. Area with remnant wetlands. The irrigation ditches disappeared. Trees knocked down. Cracks in the roads. The main wetland was drained for agricultural conversion.
F77_EP-08	Agrietamientos menores a 10 cm de ancho pero que produjeron desniveles de suelos, en 40 cm de promedio.	Cracking less than 10 cm wide but which produced ground level differences, averaging 40 cm.
F69_EP-09	Hundimientos pequeños de 2 cm. Agrietamientos menores a 10 cm. El humedal se mantuvo en tamaño.	Small settlements of 2 cm. Cracking less than 10 cm. The wetland remained the same size.
M77_EP-10	Agrietamientos de 20 cm de ancho y longitud entre 5 y 10 m. El humedal se secó un poco. El antiguo humedal fue rellenado en los bordes con el fin de convertirlo en zona agrícola y camino.	Cracking 20 cm wide and 5 to 10 m long. The wetland dried up a bit. The former wetland was filled (relleno) on the edges to convert it into agricultural land and a road.
M53_EP-11	Área de hundimiento después del sismo, de hasta 50 cm de profundidad, y también algunos levantamientos. La zona de humedales se inundó, se encontraba lodoso “como gelatina”. Agrietamientos de 20 cm de ancho y longitud entre 15 y 20 m. El trabajador de totora menciona que el humedal aumentó su tamaño luego del sismo. Actualmente ya casi no hay humedal debido al drenaje y quemado.	Area of settlement after the earthquake, up to 50 cm deep, and also some heaving. The wetland area flooded, it was muddy "like jelly". Cracking 20 cm wide and 15 to 20 m long. The totora worker mentions that the wetland increased in size after the earthquake. Currently there is almost no wetland due to drainage and burning.

M72_EP-12	Hundimientos de 50 cm de profundidad y 50 cm de diámetro aproximado. Expulsión de arena y agua. Inundaciones. Levantamiento de suelo. Agrietamientos de hasta 2 m de ancho y 80 m de largo. Se produjo una especie de zanja alrededor de la duna. Antiguo humedal, que se ha secado debido a la extracción de agua, hay algunos pozos en la zona.	Settlement 50 cm deep and approximately 50 cm in diameter. Expulsion of sand and water. Flooding. Ground heaving. Cracking up to 2 m wide and 80 m long. A kind of trench formed around the dune. Former wetland, which has dried up due to water extraction, there are some wells in the area.
M67_EP-13	Hundimientos de 50 cm de profundidad. Expulsión blanquecina de arena y agua. Agrietamientos de 20 cm de ancho en promedio y longitudes entre 7 y 8 m. Hubo sequía temporal del terreno. El terreno quedó ondulado. Las acequias se cerraron. El entrevistado comentó que una persona cayó a la zanja producida por el sismo, pero fue rescatada inmediatamente. Zona de antiguo humedal, que fue drenado con fines de conversión agrícola.	Cracking averaging 20 cm wide and 7 to 8 m long. There was temporary drought/desiccation of the ground. The ground became wavy. The irrigation ditches closed up. The interviewee mentioned that a person fell into the trench produced by the earthquake but was rescued immediately. Area of a former wetland, which was drained for agricultural conversion.
M75_EP-14	Hundimientos de 1 m de profundidad. Agrietamientos de 20 cm de ancho en promedio y longitudes entre 20 y 30 m. Levantamiento de suelo en algunos tramos. Zona de antiguo humedal, que fue drenado, secado a bombeo.	Settlement 1 m deep. Cracking averaging 20 cm wide and 20 to 30 m long. Ground heaving in some sections. Area of a former wetland, which was drained, dried by pumping.
M44_EP-15	Agrietamientos de 50 cm de ancho en promedio y longitudes de hasta 100 m. Hundimiento y levantamiento de suelo. Expulsión de arena y agua, color negro. "La sangradera se cerró el segundo día" (canales).	Cracking averaging 50 cm wide and up to 100 m long. Ground settlement and heaving. Expulsion of black sand and water. "The drainage channel closed on the second day".
M65_EP-16	Se observaron agrietamientos delgados (2cm). Los pozos de la zona se salaron (agua salobre). Habían humedales pequeños. El nivel freático estaba a 1m. Los bombeos de agua afectan a toda la vertiente, por lo que el nivel freático ha disminuido.	Thin cracks (2cm) were observed. The wells in the area became salty (brackish water). There were small wetlands. The water table was at 1m. Water pumping affects the entire slope, so the water table has dropped.
F60_EP-17	Bajó el nivel del agua. Desecamiento del suelo. Hundimientos, y agrietamientos de 35 cm de ancho y 8 m de largo. El humedal ha sido rellenado, se encuentra mucho material de desmonte alrededor.	The water level dropped. Soil desiccation. Settlement, and cracking 35 cm wide and 8 m long. The wetland has been filled, there is a lot of fill material around.
M66_EP-18	Agrietamientos de 40 cm de ancho en promedio y longitud hasta 600 m de largo. Desecamiento del terreno. Bajó el nivel del agua. Este humedal fue afectado de varias maneras: drenado, quemado, rellenado, etc.	Cracking averaging 40 cm wide and up to 600 m long. Ground desiccation. The water level dropped. This wetland was affected in several ways: drained, burned, filled, etc.
M88_EP-19	Agrietamientos. Había laguna. Bajó el nivel de agua.	Cracking. There was a lagoon. The water level dropped.
M34_EP-20	Agrietamientos de 20 cm de ancho. No hubo mayor afectación al terreno.	Cracking 20 cm wide. There was no major affectation to the ground.
M65_EP-21	Camino que cruza un humedal extinto, el cual sufrió hundimiento y una abertura como un pozo, durante el sismo, actualmente sin agua, modificado y rellenado para camino. Agrietamiento de 50 cm de ancho. Expulsión de agua y arena.	Road crossing an extinct wetland, which suffered settlement and an opening like a well during the earthquake, currently without water, modified and filled for the road. Cracking 50 cm wide. Expulsion of water and sand.

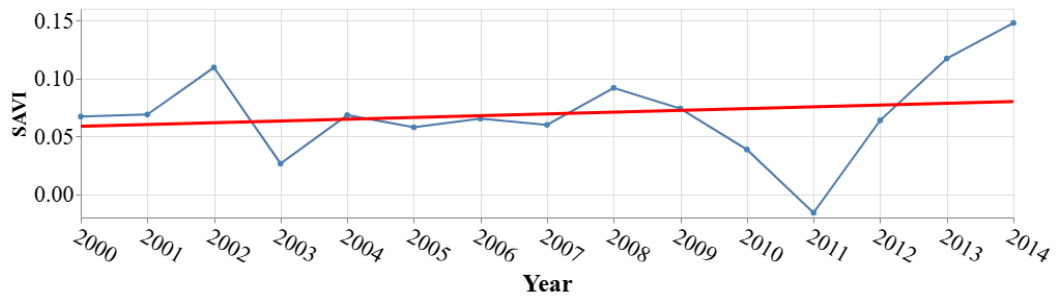
F65_EP-22	Agrietamientos de 10 cm de ancho en promedio y longitud hasta 100 m de largo. Zona de antiguo humedal, que "se ha secado solo" menciona la informante.	Cracking averaging 10 cm wide and up to 100 m long. Area of a former wetland, which "dried up on its own" according to the informant.
F88_EP-23	Zona de antiguo humedal, que fue secado por drenaje para ganar terreno, actualmente relleno y convertido a zona urbana. Se produjo hundimiento de viviendas y loza deportiva, licuación de suelos y levantamiento de veredas. Hundimientos de 40 cm de profundidad	Area of a former wetland, which was dried by drainage to gain land, currently filled (relleno) and converted to an urban area. Settlement of houses and a sports slab, soil liquefaction and heaving of sidewalks. Settlement 40 cm deep.
F37_EP-24	Agrietamientos entre 3 y 4 cm de ancho y longitud hasta 5 m de largo. Zona de antiguo humedal, que fue relleno para agricultura y vivienda. Suelo inestable con nivel freático de 2m.	Area of a former wetland, which was dried by drainage to gain land, currently filled and converted to an urban area. Settlement of houses and a sports slab, soil liquefaction and heaving of sidewalks. Settlement 40 cm deep.

S2. Annual NDVI and SAVI Temporal Trend

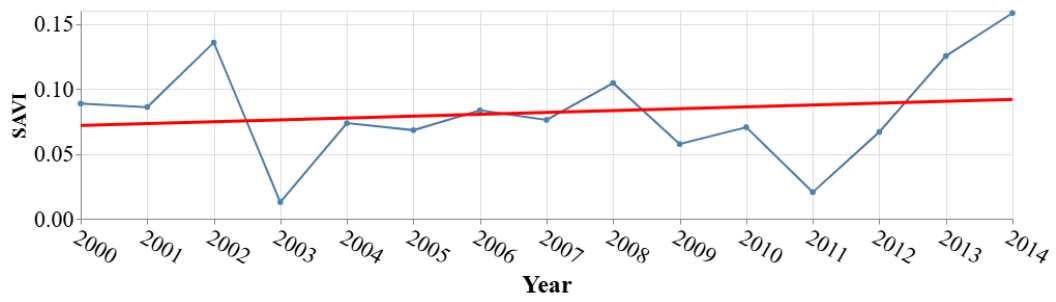
The results of the NDVI calculations and the extraction of time-series data from LandSat satellite imagery are presented through the following line graphs. These figures display the annual mean values derived from all available LandSat scenes between 2000 and 2014. The analysis covers six wetland sectors (H-01 to H-06). The X-axis represents the years 2000–2014 (annual NDVI averages), while the Y-axis shows the corresponding SAVI (Soil-Adjusted Vegetation Index) values. These temporal trends allow the identification of the marked vegetation anomaly observed after the 2007 event, highlighting spatially variable responses influenced by soil liquefaction processes as well as local anthropogenic disturbances.



H - 03



H - 04



H - 05

