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ALERTES-SC3 Early Warning System prototype for South Iberian Peninsula: on-site approach.

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In recent years several Earthquake Early Warning Systems (EEWS) have been developed for different parts of the world.

The area between SW Cape St. Vicente and the Strait of Gibraltar is one of the most seismically active zones in the Ibero-Maghrebian region, with predominantly moderate and superficial seismicity, but also big events with associated tsunamis are well documented in the area, like the 1755 Lisbon earthquake. In the frame of the ALERT-ES (2011-2013) and ALERTES-RIM (2014-2016) Spanish projects, the ALERTES-SC3 EEWS, regional approach, prototype has been developed at the Royal Spanish Navy Observatory (ROA) and is being tested in near real time for south Iberia. This prototype, based on the SeisComP3 software package, is largely based on algorithms derived from the analysis of the first seconds of the P wave records. Calculation of several parameters are carried out, mainly the characteristic period (τc) and the displacement peak (Pd), but also the velocity peak (Pv), the maximum period (τPmáx), among others.

In order to warm the areas closest to the hypocentre, places located inside the “blind zone”, a on-site EEWS has also been developed by ROA and integrated in the ALERTES-SC3 prototype. From the on-site approach, a warm level is declared from one station as a function of the estimated characteristic period (τc) and the displacement Peak (Pd), although the earthquake location and therefore the lead time available remains unknown. This on-site EEWS is being tested in several Western Mediterranean net (WM) stations as ARNO (Arenosillo, Huelva,Spain) or CHAS (Chafarinas island, North Africa, Spain). Also an on-site low cost station is being developed based in low cost accelerometers. In this work the current state of the on-site EEWS developed, its integration in the ALERTES-SC3 EEWS system and the low cost seismic stations are shown.