



## **Towards a new earthquake catalog for Ireland and its near offshore domains : a joint analysis of permanent and dense temporary seismic array data**

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Ireland is located on the European North Atlantic margin, at the northwesternmost edge of the Eurasian continent, several hundred kilometers away from the closest plate boundaries, namely the North Atlantic ridge and the Nubia-Eurasia convergence front. Its low level of seismicity, according to the number of events and magnitudes given by the existing catalogs, is thus expected. However, it still appears surprisingly low compared to neighboring domains, including Great Britain and, more generally, the rest of the Atlantic margin. One explanation might be that the events reported in those catalogs do not reflect the actual seismic activity of Ireland due to a lack, until recently, of permanent seismological stations on the Irish territory. Although the Irish National seismic Network (INSN) now consists of 6 stations, and despite a good station coverage of Britain, to the east, by the British Geological survey (BGS) stations, most of the earthquakes occurring in Ireland may still be missed because of their low magnitude. Here, we combine the waveform data recorded at permanent (INSN, BGS) stations with that from dense temporary array deployed in the past 5 years by the Dublin Institute for Advanced Studies (DIAS) and the University College Dublin (UCD). In addition to new arrival time data and new locations for already known catalog events, our analysis reveals newly detected earthquakes in Ireland, and sheds new light on the seismotectonics of this intraplate continental region. This sets the stage for joint earthquake relocation and 3D velocity model determination, which should lead to a better understanding of the relationships between the current seismic activity and the geological structure of the Irish lithosphere.