

Noise characteristics on the French Atlantic coast: Focus at 4 stations around the Brittany

Éric Beucler¹, Antoine Mocquet¹, Martin Schimmel², Jérôme Vergne³, Olivier Quillard¹,
Matthieu Sylvander⁴ and Sébastien Chevrot⁴

1. Laboratoire de Planétologie et Géodynamique de Nantes, UMR 6112, Université de Nantes, France
2. Departement of Structure and Dynamics of the Earth, Institute of Earth Sciences Jaume Almera, Consejo Superior de Investigaciones Científicas, Barcelona, Spain
3. EOST - UMR7516, 5 Rue René Descartes, F - 67084 Strasbourg, France
4. Institut de Recherche en Astrophysique et Planétologie, Observatoire Midi Pyrénées, 31400 Toulouse, France



The seismic noise at 4 different stations, located on the French and English seashores, is studied between Sept. 29th (273) and Nov. 18th (323) 2012. For each component, the Power Spectral Densities (psd) are computed for time windows of 6' with a 1' overlapping time; the median of four psd is finally retained for each 20' of signal. Psd are classically computed between 0.01

and 10Hz, and the Probability Density Functions (pdf) are computed with bins of $3 \log(\nu)$, where ν is the frequency. In the 2-8s period range, a strong similarity of the seismic signal energy temporal variation is observed for all stations. The patchy features of this energy (Fig. 2) has been already observed on the vertical components, at periods between 5-10s, (e.g. Chevrot

et al., 2007; Landès *et al.*, 2010; Obrebsky *et al.*, 2012). The vertical component is the most sensitive to this energy at all stations. The noise between 0.015 and 10 Hz can be related to the high and low tide cycles. At PY41, where the tide effects are very strong, it is clear that a part of the energy around the second microseismic peak is generated far from the coast (Fig. 3).

PY48

- Location: Camaret/mer (Finistère)
- Sensor: STS-2
- Installation: Inside a blockhaus on a cliff (concrete)

PY4A

- Location: Arzon (Morbihan)
- Sensor: STS-2
- Installation: outside in a plastic container on a concrete slab

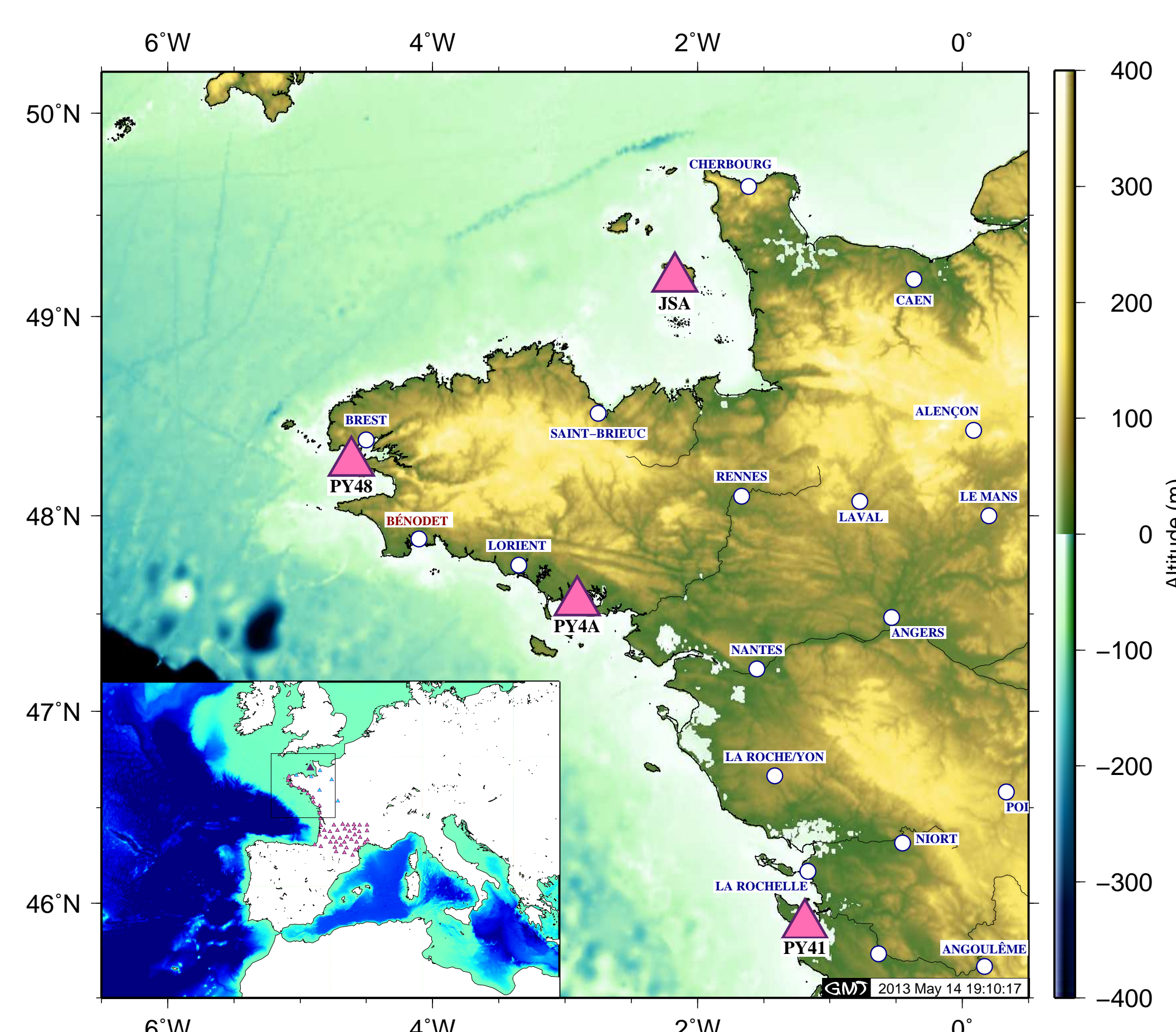


Fig. 1: Location of the seismic stations used in this study. PY41, PY4A and PY48 are temporary stations deployed through the PYROPE project, JSA is the BGS permanent station, installed on Jersey Island. The epicentral distances PY41-JSA and PY41-PY48 are both approximately 370 km. The inserted image show the deployments of PYROPE and VIBRIS projects.

JSA

- Location: St Aubins (Jersey)
- Sensor: Trillium 240
- Installation: inside a tunnel (concrete)

PY41

- Location: Château d'Oléron (Charente-maritime)
- Sensor: STS-2
- Installation: inside the Citadelle on a concrete slab

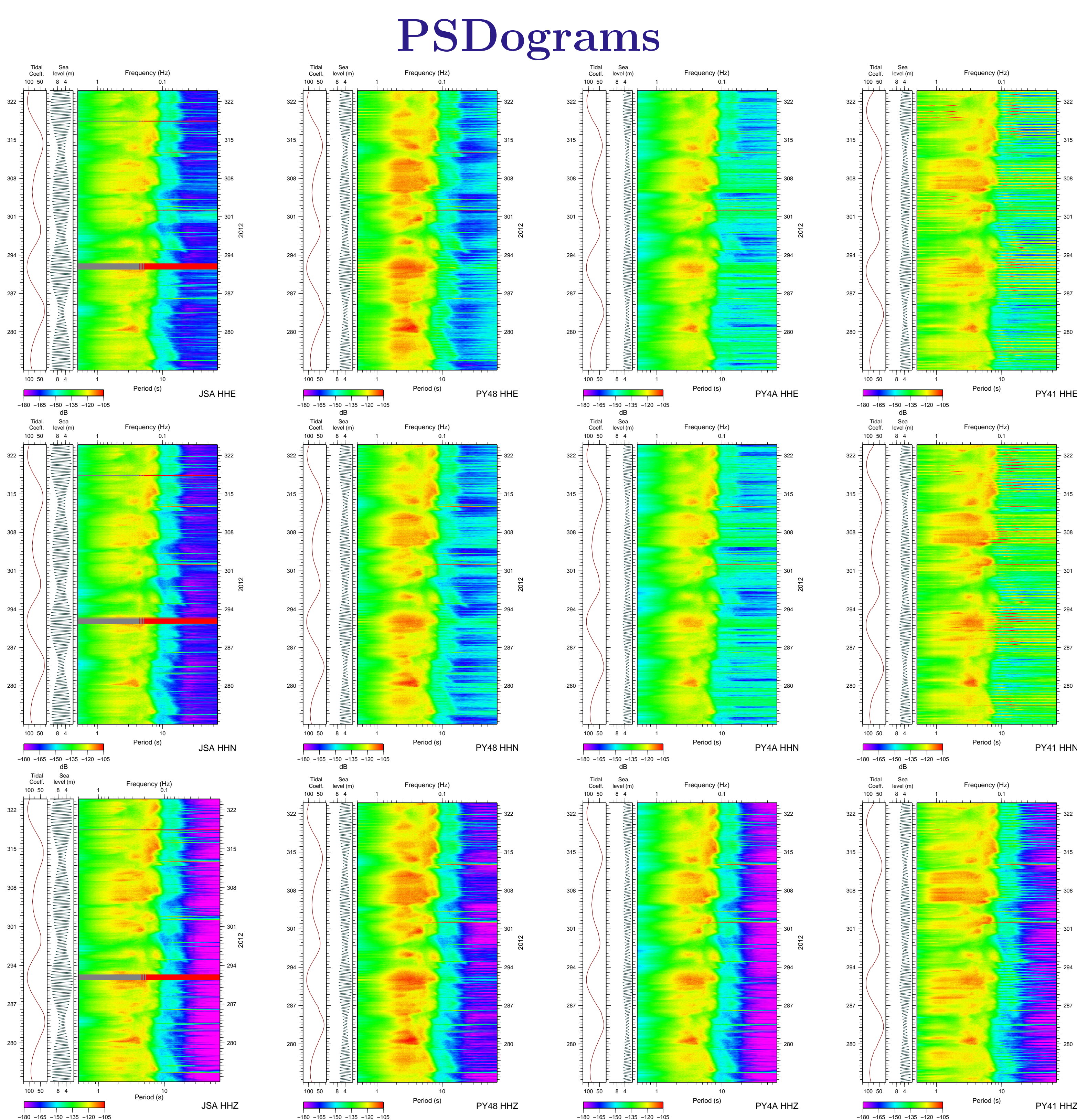


Fig. 2: Evolution of the psd as a function of time, for each component and each station.

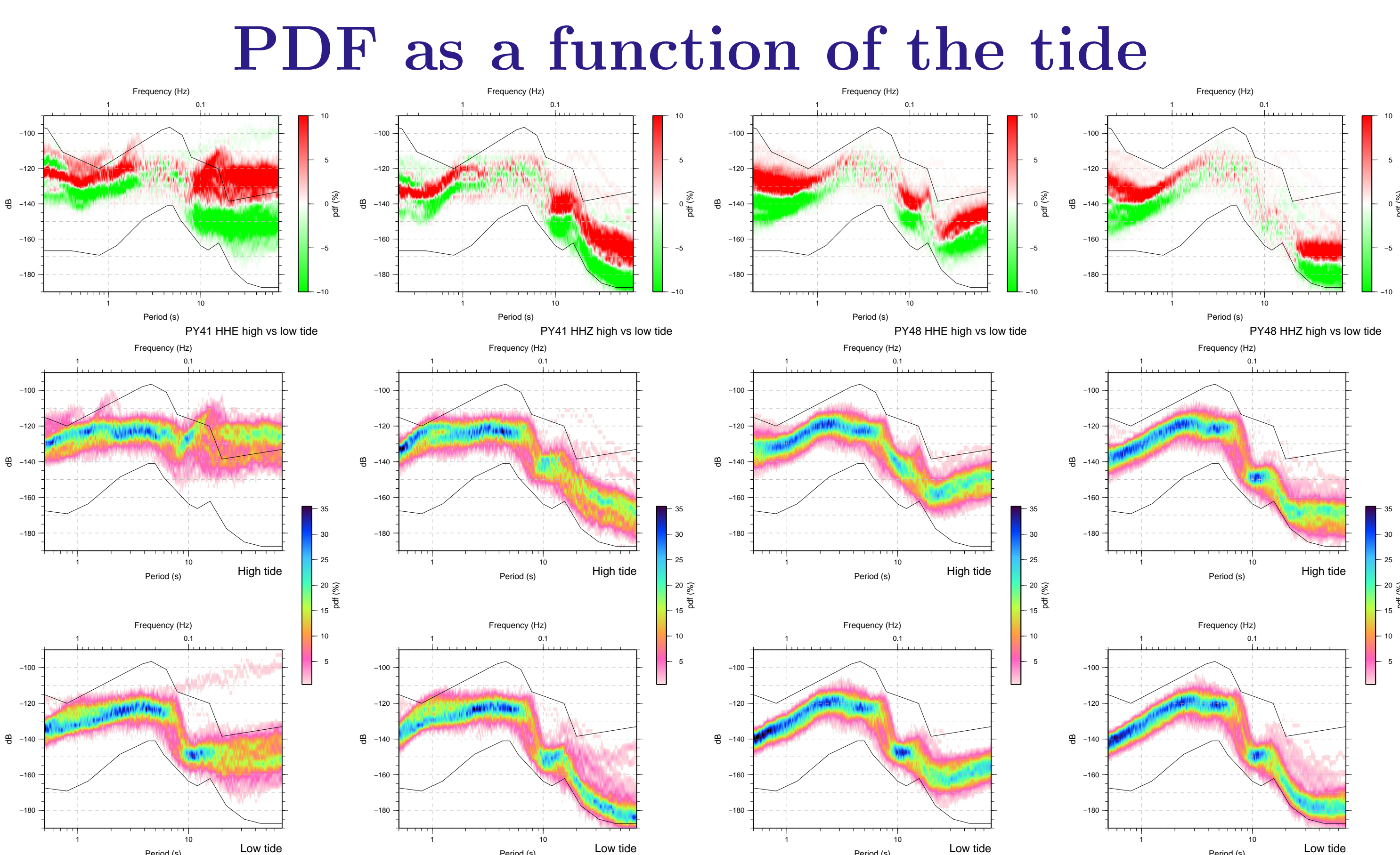


Fig. 3: PDFs of the psd between the julian days 273 and 323, splitted as a function of the tide at PY41 and PY48. The time windows for stacking are defined as 45' around the official times (SHOM) for the high and low tide.

References

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