

1 **The Earth's energy imbalance and exchanges at the atmosphere-ocean interface:**
2 **from fundamental research to societal concern.**

3 Conveners: Karina von Schuckmann, Cécile Guieu, Kevin Trenberth, Emilie Breviere

4 The main cause of climate change is from human activities, which alter the
5 composition of the atmosphere and trap excess solar energy in the Earth system. This
6 Earth's energy imbalance (EEl) results in planetary heating and gives rise to observed
7 global warming, which interferes with the natural flow of energy through the climate
8 system. Processes taking place at the atmosphere-ocean interface are then critical to
9 the regulation of Earth climate, including the delivery of key services provided by
10 marine ecosystems. Our capability to measure and understand the exchanges of heat,
11 energy, gases and particles in the Earth's climate system has advanced over the past
12 decades. However there are still large uncertainties, in particular in the quantification
13 of the magnitude and spatial distribution of heating in the system, as well as a lack of
14 understanding on how to adequately parameterize fundamental controlling processes,
15 which are in turn impairing the projection of future global environmental trends.

16 This session will be under both, the auspices of the 6th CLIVAR research focus
17 (<http://www.clivar.org/about/research-foci#six>) and the SOLAS international project
18 (<http://www.solas-int.org>) to present research and to discuss research opportunities,
19 societal implications, as well as future perspectives.

20 Two keynote talks (20 min. each) will open the session. We are soliciting four
21 presentations (10 min. each) on research related to those projects, ideally from
22 multidisciplinary and interdisciplinary perspectives. Poster contributions will open the
23 possibility for in depth discussions and networking.

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25 Suggestion for key note talks:

- 26 1) M. Palmer, MetOffice, Exeter, UK
27 2) N. Beaumont, Plymouth Marine Laboratory, Plymouth, UK