

This information has been extracted from the Panel Criteria and Working Methods document (REF 01.2012) published by the REF Team in January 2012.

### UOA Descriptor

The UOA includes earth, environmental and planetary sciences, including: geophysics; geochemistry; palaeontology; geology; mineral physics; evolution of planetary atmospheres, surfaces and interiors; earth surface processes; the physics, chemistry and biology of the environment, including ecology and conservation; atmospheric, marine, freshwater, terrestrial and soil sciences; innovative measurement systems; global change; natural resources; natural hazards; pollution and environmental management.

The sub-panel expects submissions in this UOA from all areas of earth systems and environmental sciences, as defined above, and expects that the majority of the research activity submitted will have made a direct contribution to the UOA as characterised in the UOA descriptor. It recognises, however, the increasingly interdisciplinary nature of research, and expects that submissions may contain work that contributes to this UOA and other cognate disciplines. It is expected, however, that submissions will be made to the UOA where there is the most appropriate expertise to assess the body of work as a whole.

### Outputs

<b>Citations</b>	<p>This sub-panel will be provided with citation data by the REF Team.</p> <p>Panels will be provided with the number of times each output has been cited and the norms for the field (Scopus data).</p> <p>No panels will use impact factors, journal lists, rankings, or publisher quality information.</p>
<b>Eligible output types</b>	<p>All outputs are eligible providing they embody research as defined for the purposes of the REF<sup>1</sup>.</p>
<b>Non-text or practice-based submissions</b>	<p>Accepted.</p> <p>HEIs must include a description of the research process and content in REF2 for each applicable output (max 300 words). Reviews can be submitted but must be justified in REF2 (max 300 words) to identify the original research and the new insights reported.</p>
<b>Double-weighted outputs</b>	<p>Accepted in exceptional circumstances.</p> <p>HEIs may request that outputs of extended scale and scope be double-weighted. HEIs may include a 'reserve' output with each output requested for double-weighting.</p> <p>A justification (max 100 words) will need to be submitted for consideration by the sub-panel.</p>

<sup>1</sup> 'For the purposes of the REF, research is defined as a process of investigation leading to new insights, effectively shared'. See REF 02.2011 Assessment Framework and Guidance on Submissions for the full definition.

<p><b>Co-authored or collaborative outputs submitted in different submissions (same HEI but different UOAs, or different HEI same/difference UOA)</b></p>	<p>Accepted but only where an author has made a significant contribution to the output.</p> <p>No additional information is required, although if the sub-panel is unclear as to the significant contribution of an individual to the output then it may request further information from the HEI through an audit.</p>
<p><b>Co-authored or collaborative outputs submitted in the same submission (same HEI and same UOA)</b></p>	<p>All panels consider that the fullest and most favourable impression of research will normally be gained when each co-authored output is listed once within a submission.</p> <p>Co-authored outputs within the same submission only be accepted in very exceptional cases against a maximum of 2 individuals per submission (must be explained in REF2, max 100 words).</p>
<p><b>Additional output information required</b></p>	<p>None stated.</p>

## Criteria and level definitions

In assessing outputs, the sub-panels will look for evidence of originality, significance and rigour and apply the generic definitions of the starred quality levels as follows:

In assessing work as being four star sub-panels will expect to see evidence of, or potential for, some of the following types of characteristics:

- agenda-setting
- research that is leading or at the forefront of the research area
- great novelty in developing new thinking, new techniques or novel results
- major influence on a research theme or field
- developing new paradigms or fundamental new concepts for research
- major changes in policy or practice
- major influence on processes, production and management
- major influence on user engagement.

In assessing work as being three star, sub-panels will expect to see evidence of, or potential for, some of the following types of characteristics:

- makes important contributions to the field at an international standard
- contributes important knowledge, ideas and techniques which are likely to have a lasting influence, but are not necessarily leading to fundamental new concepts
- significant changes to policies or practices
- significant influence on processes, production and management
- significant influence on user engagement.

c. In assessing work as being two star, sub-panels will expect to see evidence of, or potential for, some of the following types of characteristics:

- provides useful knowledge and influences the field
- involves incremental advances, which might include new knowledge which conforms with existing ideas and paradigms, or model calculations using established techniques or approaches
- influence on policy or practice
- influence on processes, production and management
- influence on user engagement.

In assessing work as being one star, sub-panels will expect to see evidence of, or potential for, some of the following types of characteristics:

- useful but unlikely to have more than a minor influence in the field
- minor influence on policy or practice
- minor influence on processes, production and management
- minor influence on user engagement.

Research will be graded as 'unclassified' if it falls below the quality levels described above or does not meet the definition of research used for the REF.

## Impact

<b>Eligibility of submitting the impact of teaching</b>	Excluded unless they extend significantly beyond the submitting HEI. For example, the take-up by the HE sector of products arising from research such as open source software would be eligible.
<b>Impact case studies – quality of the underpinning research</b>	HEIs must identify up to 3 outputs that demonstrate the quality of the underpinning research. These will be used by the sub-panel to judge the quality.

## Environment

<b>Additional environment data to be provided</b>	None required.
<b>Environment elements weightings (5 elements)</b>	0% - overview (information only) 20% - strategy 30% - people 30% - income, infrastructure & facilities 20% - collaboration & contribution to the discipline
<b>Structure of submissions</b>	HEIs are encouraged to structure submissions using research groups, and to link individuals to research groups.