# Terms of Reference - Advisory Board for the AI Weather Quest
## *ECMWF Competition for Improving Sub-Seasonal to Seasonal Predictions Using AI/ML*

1. **Introduction**

The AI Weather Quest is a competition organised by ECMWF aimed at enhancing sub-seasonal to seasonal (S2S) weather predictions through cutting-edge AI/ML techniques.

The competition will commence with a launch in early 2025, after which participating teams will refine their forecasting models based on historical data. Once the forecast phase begins (expected in mid-2025), teams will submit their S2S forecasts weekly for the initial duration of one year, with evaluations and feedback provided at the end of each season.

An advisory board, composed of invited experts from relevant fields, is set up by ECMWF to support the competition's design and execution and to ensure it is transparent, fair, and technically robust.

This document outlines the responsibilities and expectations for the advisory board.

2. **Membership**

   o The advisory board is composed by invited experts in a field relevant to the implementation of the AI Weather Quest.
   o Members are invited by ECMWF for a duration of one year. Membership in the board may be renewed by ECMWF.
   o ECMWF will not reimburse members for their participation in the Advisory Board.

3. **Responsibilities**

   o Advisory on planned challenge structure and scope: make recommendations to enable the competition to maximise exploitable developments in S2S forecasts and be attractive to both AI and weather prediction experts.

   o Advisory on technical choices: offer suggestions on practical technicalities like datasets formats, evaluation system, and model documentation guidelines.

   o Transparency in organisation: ensure that the competition is set up transparently, with clear rules and evaluation processes, thus fostering trust among participants.

   o Execution monitoring: regularly review the proceedings of the competition and recommend improvements.

   o Review process: make recommendations on the evaluation process to verify it is fair and transparent.

4. **Procedures**

   o The advisory board will be chaired by a representative of ECMWF.
   o Meetings are expected to be convened approximately three times during the competition planning phase (i.e., by mid-2025). In the execution phase, meetings will occur less frequently (approximately  4 times per year). Meetings will be held by videoconference.

o The Board could also be invited to review planning or technical documents, providing feedback, and participating in ad-hoc consultations as needed.

5. **Board recommendations**

Advisory Board recommendations will be adopted consensus wherever possible. In exceptional cases, where consensus cannot be reached, any written recommendations by the board will reflect minority views.

6. **Scope of influence and fairness**

The board will provide strategic guidance and recommendations; however, ECMWF retains final responsibility for the operational execution of the competition.

Board members (or their institutions) may participate to the competition. They will not have privileged access to information that could compromise the fairness of the competition.

7. **Confidentiality**

Advisory Board discussions are confidential. Formal recommendations of the Advisory Board adopted by the board will, however, be published on the AI Weather Quest website.