ECMWF

Advisory Board Meeting #1 Summary of Results   Held online on 21st November 2024

Present:

Board members: Sebastian Lerch, Gabriela Aznar Siguan, Jonathan Weyn, Amy McGovern, Christopher Frans, David Wallerstein, Saied Vaghefi, Andrea Manrique Sunen

ECWMF: Frederic Vitart, Olga Loegel, Joshua Talib, Jörn Hoffmann, Stephan Siemen, Matthew Chantry

Agenda:

1. Introduction to the advisory board, roundtable
2. Competition scope, objectives and timeline
3. Forecast contest including evaluation
4. Planned IT infrastructure
5. *Website development*
6. Planned promotion of competition

Discussion points

Board Members commented on different aspects of the proposed approach, and suggested amendments.

Item #2: Competition scope, objectives and timeline

- **Disclosure of submitted methodology**:
  - Teams may be hesitant to disclose full methodologies due to competition and the potential for reverse engineering.
  - Flexible guidelines should be developed to balance transparency and confidentiality.
  - ECMWF should be open to adapt methodology requirements based on team feedback to address concerns over sensitive information.
- **Leaderboards**: Public comparison against ECMWF benchmarks is a significant draw for participants.
- **Recruitment webinars**: Early recruitment webinars are recommended, preferably before the end of February, to allow sufficient time for team formation and resources planning**.**
- **Resource inequities**: Universities often lack the computational and human resources available to larger tech companies (not equal footing in terms of GPUs, etc.). Suggestions included:
  - Use leaderboards for different metrics, including some that are normalised by resource use.

- Disclosing the computational cost of forecasts to evaluate efficiency and consider this parameter in the evaluation.
- Encouraging partnerships between academic institutions and private organisations.
- **Additional awards**: suggested additional awards categories include innovation, efficiency, and regional performance to encourage broader participation.
- **Team Size**: while members' registration is limited to 10 contact points, teams can include more contributors who are not listed. The participant registration form should clarify this point.

Item #3: Forecast contest and evaluation

- **Additional evaluation parameters**: while starting with basic variables, the inclusion of metrics like wind speed or surface radiation could be beneficial for sectors like energy. However, it was also recognized that not all models are currently able to produce these parameters, leading to a trade-off. Additional meteorological variables may be added later.
- **Event-based rankings**: introduce rankings focused on specific high-impact events (e.g., heatwaves) could generate additional interest.
- **Submission tools**: A Python package will be made available to streamline forecast submissions, aligning with common programming practices.
- **Submission deadlines**: Submission windows should balance participants' work schedules by avoiding early-week deadlines, while maintaining strictness to ensure equal access to observational data. Aligning forecast dates with WMO models would provide a valuable benchmark against dynamical forecast models, and incorporating extended-range ECMWF forecasts could enhance submissions if timelines permit.

Item #5: Webpage development

- **Clear Objectives:**
  - The competition's goals and timeframes should be clearly articulated to facilitate media and public outreach.
  - The website should identify current challenges in sub-seasonal forecasting and the potential opportunities in using a machine learning framework.
  - The advisory board suggested reviewing webpage content before launch to ensure clarity and appeal.
- **Contact Points:**
  - Contact information should be made readily available with a designated team prepared to address queries promptly.

Next steps

- Update the timeline of the competition to provide more time for the Initial Training Phase. *JT, OL - Action taken: The first forecast season (June, July, August) has been re-designated as a training season, allowing participants to trial the forecast submission process and evaluation system. This period also provides an opportunity for participants to continue refining and training their models. The official competition phase will commence in August 2025. See updated competition timeline bellow for details.*
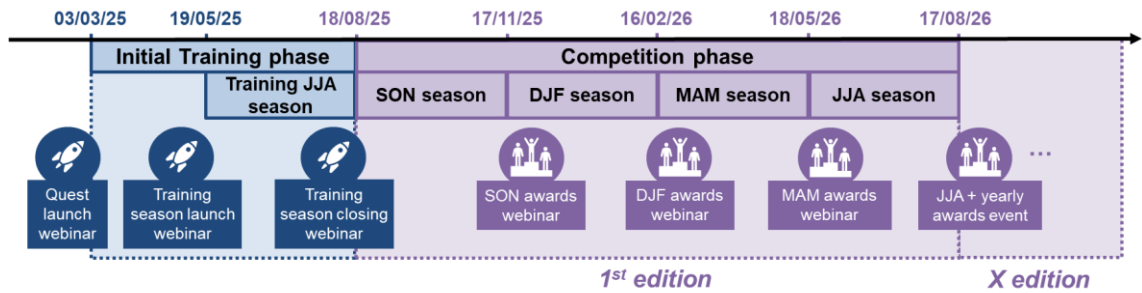
- Schedule recruitment webinars for early 2025.
  OL - Action taken: Three webinars are to take place before the official competition (see updated competition timeline above):
    - *One before the launch of the overall competition. It is currently scheduled for 20th February 2025.*
    - *One before the launch of the training forecast season. It is currently scheduled for 2nd May 2025.*
    - *One at the end of the training forecast season. To be scheduled.*
- Create the V1 website content (overview tab, advisory board tab and registration form), ensuring it clearly articulates the competition's goals.
  OL - The V1 website content is in preparation. It is proposed that a short paragraph and a photo will introduce each advisory board member under the "Advisory Board" tab. Following this summary of results, these descriptions and photos will be individually sent to each member to seek their review and explicit confirmation before publishing them on the website.
- Establish a clear contact channel for participants to ask questions.
  OL - Action taken: A dedicated email address, aiweatherquest@ecmwf.int, has been created to streamline communication. This address will be monitored by both Olga and Joshua, ensuring timely responses to participants' questions. It will be prominently displayed on the competition website for easy access.
- Define methodology sharing guidelines, ensuring they address disclosure concerns.
  ECMWF team - To be prepared and discussed during the next advisory board meeting.
- Refine the evaluation system to ensure equity when comparing competitors.
  JT - To be prepared and discussed during the next advisory board meeting.
- Review submission timelines.
  JT – Decision made: Forecasts will commence on Thursdays and predict weekly-mean quintiles at lead times of days 11 to 17 and days 18 to 25.