NWP Training course, Predictability & ensemble forecast systems

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European Centre for Medium-Range Weather Forecasts (ECMWF)

ECMWF is an international organisation with

- 23 Member States

- 12 Cooperating States

ECMWF's role is to address the critical and most difficult research problems in medium-range NWP that no one country could tackle on its own
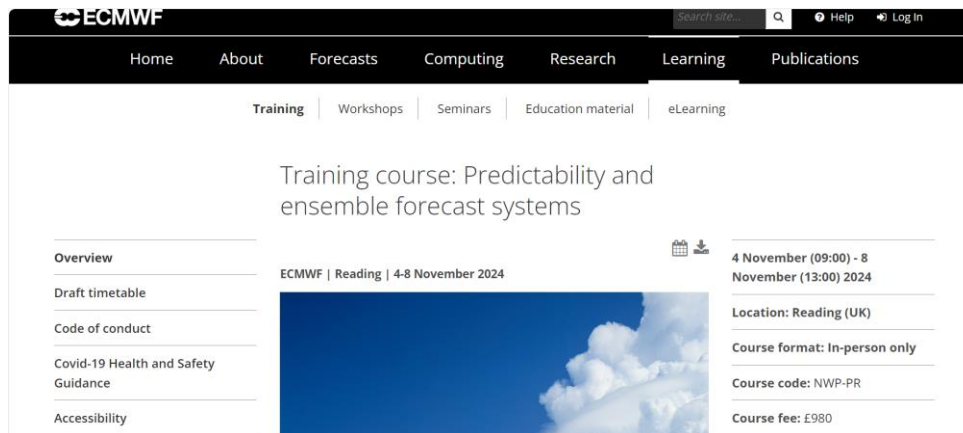
Three sites in UK, Italy and Germany

- Both research institute & 24/7 operational centre
- Established in 1975
- Advanced training = one of ECMWF strategic activities

NWP training course: Predictability & ensemble forecast systems

- Course webpage: https://events.ecmwf.int/event/335/

- ECMWF training: https://www.ecmwf.int/en/learning

- eLearning resources https://learning.ecmwf.int/

- Please note, you will need to watch the instruction videos for the practical sessions, which have been uploaded to the e-learning platform and you should have been invited to watch them. You can see the page here: https://learning.ecmwf.int/course/view.php?id=80&section=1
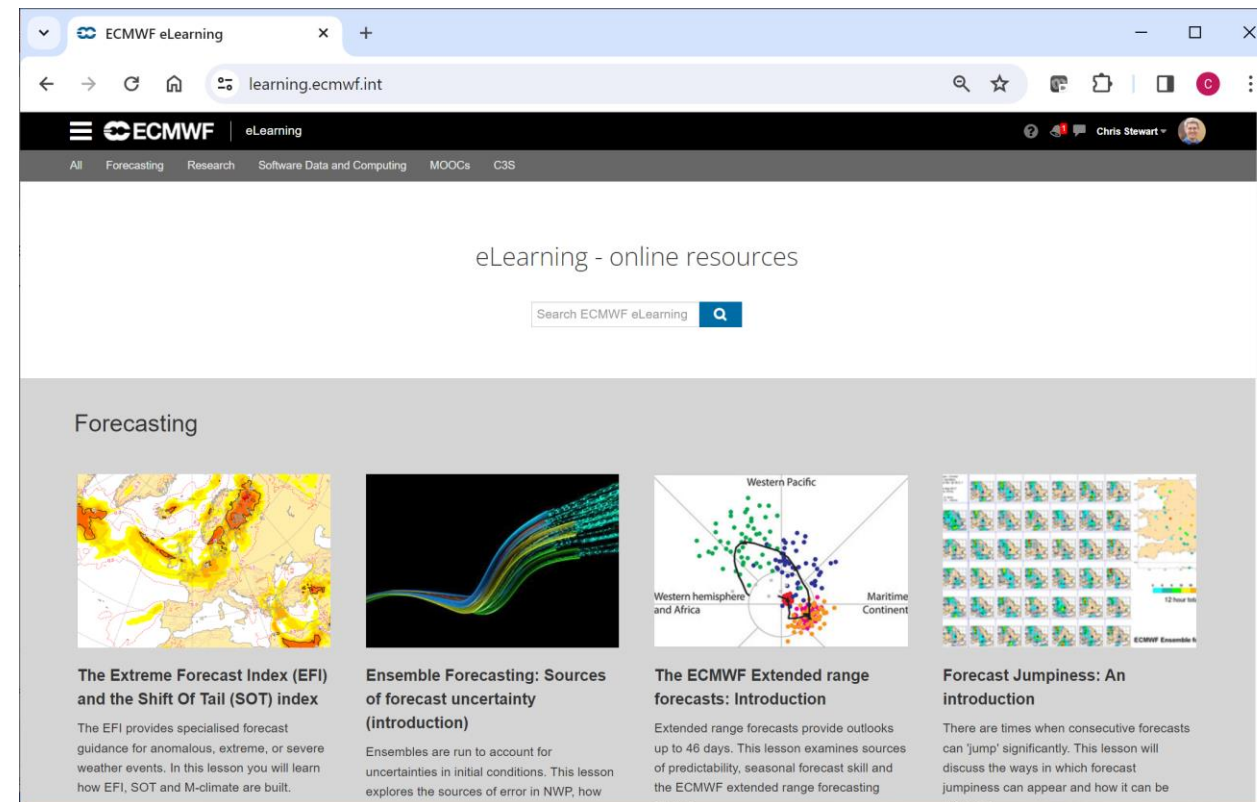
Learning Management System

- Visit https://learning.ecmwf.int/ (can login with ECMWF account, then we add you to course)

- Select your name (top right), then "My courses", then "Predictability and ensemble forecast systems".

- Forum:

  – Introduce yourself

  – Ask questions

  – Start discussion

- E-learning modules (optional, pre-course):

  – Seasonal Forecasting

  – Ensemble Forecasting: Sources of forecast uncertainty (introduction)

  – Extended Range Forecasts

  – Ensemble Forecasting

General Housekeeping

Access to Centre

- Please sign in/out each day at reception

Personal belongings

- Do not leave any personal belongings at ECMWF outside office hours.
- We recommend that you do not leave valuables unattended in the classroom or any other part of the building.
- ECMWF will not take any responsibility for items lost at the premises.

Smoking

- Smoking is not allowed inside the building. Please ask at Reception Desk and you will be directed to the outside smoking area.
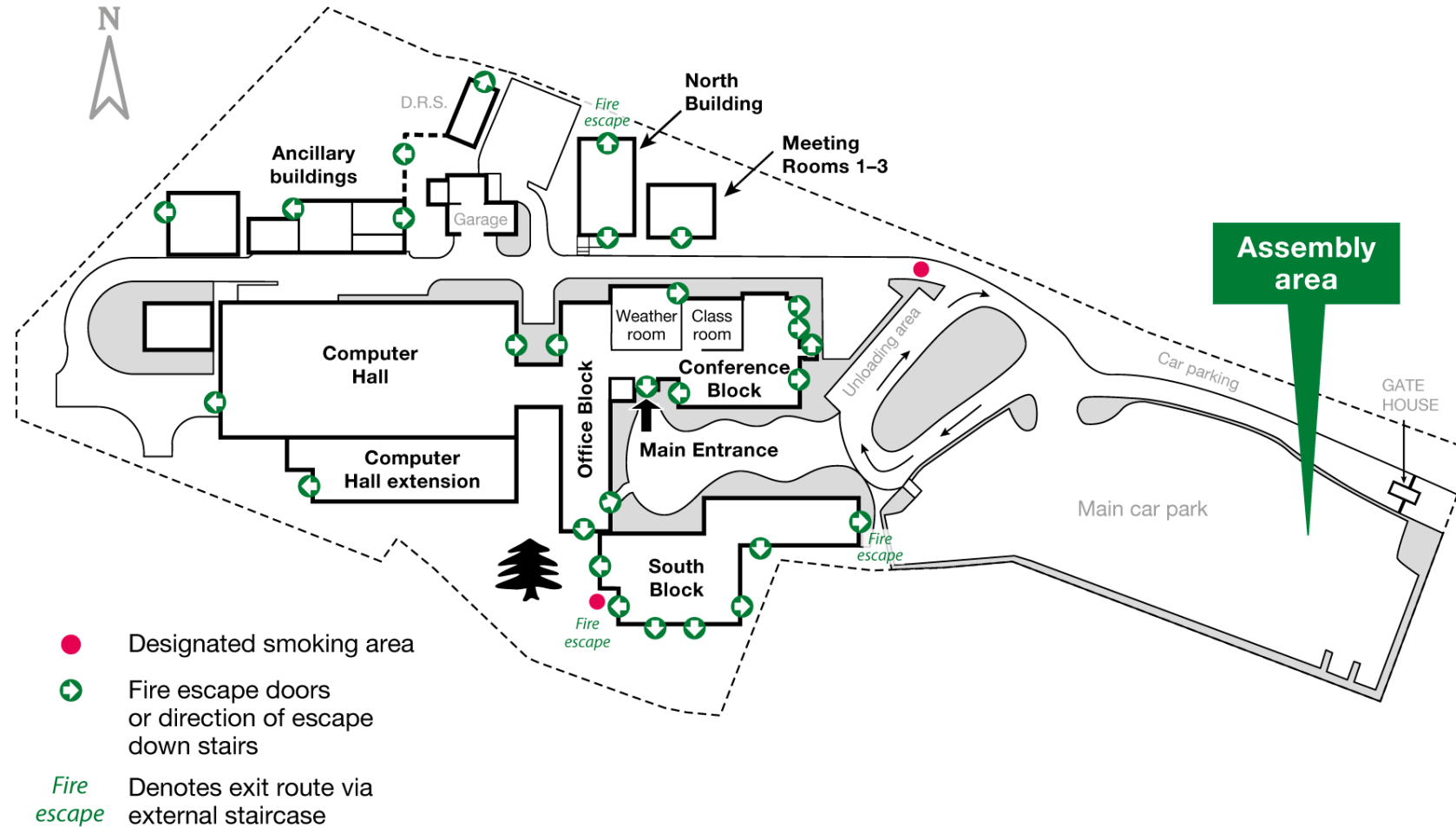
Enquiries

- If you have any questions, please contact the Reception Desk who will liaise with the course organisers.

Make the most of the training!

- Please don't check emails on the computers, or on other devices ☺
- There are no stupid questions!

General Housekeeping

Fire Escapes and Assembly Area

Designated smoking area

Fire escape doors or direction of escape down stairs

Fire escape Denotes exit route via external staircase

Restaurant

- The restaurant provides the following daily services:
  - Light breakfast from 08:00
  - Lunch: hot counter choices, salads, sandwiches, soup and desserts.

- Please speak to the restaurant staff if you have any special dietary requirements.

- The restaurant can only accept chip and pin and contactless card payments.

- Coffee/tea will be supplied during the breaks as specified on the programme.

Predictability and ensemble forecast systems. Training course programme

Monday, 4 November

Time	Event		Duration
08:45 → 09:15	**Arrivals and registration** Speaker: Christopher Stewart (ECMWF)	📍	🕐 30m
09:15 → 10:15	**Introduction and practicalities** Speaker: Magdalena Alonso Balmaseda (ECMWF) 📄 Slides	📍	🕐 1h
10:15 → 10:45	**Coffee break**	📍	🕐 30m
10:45 → 11:40	**Introduction to probabilistic seamless forecasting** Speaker: Magdalena Alonso Balmaseda (ECMWF) 📄 Slides	📍	🕐 55m
11:40 → 11:45	**Comfort break**	📍	🕐 5m
11:45 → 12:45	**Chaos and predictability limits** Speaker: Antje Weisheimer (ECMWF) 📄 Slides	📍	🕐 1h
12:45 → 13:45	**Lunch break**	📍	🕐 1h
13:45 → 14:40	**Initial condition uncertainty** Speaker: Simon Lang (ECMWF) 📄 Slides	📍	🕐 55m
14:40 → 14:45	**Comfort break**	📍	🕐 5m
14:45 → 15:40	**Diagnostics (1)** Speaker: Mark Rodwell (ECMWF) 📄 Slides	📍	🕐 55m
15:40 → 16:00	**Coffee break**	📍	🕐 20m
16:00 → 16:30	**Introduction to practial sessions - Making sure your computer works!** Speaker: Martin Leutbecher (ECMWF)	📍	🕐 30m
16:30 → 17:00	**Express poster presentations**		🕐 30m
17:00 → 18:30	**Evening reception**	📍	🕐 1h 30m

Icebreaker

Tuesday, 5 November

Time	Event		Duration
09:15 → 10:15	**Coupled ocean-atmosphere variability** Speaker: Chris Roberts (ECMWF) 📄 Slides	📍	🕐 1h
10:15 → 10:45	**Coffee break & Group photo**	📍	🕐 30m
10:45 → 11:40	**Coupled sea ice-atmosphere variability** Speaker: Steffen Tietsche (ECMWF) 📄 Slides	📍	🕐 55m
11:40 → 11:45	**Comfort break**	📍	🕐 5m
11:45 → 12:45	**Coupled ocean-atmosphere variability - MJO** Speaker: Frederic Vitart (ECMWF) 📄 Slides	📍	🕐 1h
12:45 → 13:45	**Lunch break**	📍	🕐 1h
13:45 → 14:40	**Poster Session**	📍	🕐 55m
14:40 → 14:45	**Comfort break**	📍	🕐 5m
14:45 → 15:40	**Coupled land-atmosphere variability** Speaker: Jonathan Day (ECMWF) 📄 Slides	📍	🕐 55m
15:40 → 16:00	**Coffee break**	📍	🕐 20m
16:00 → 17:00	**Coupled ocean-atmosphere variability - ENSO** Speaker: Magdalena Alonso Balmaseda (ECMWF) 📄 Slides	📍	🕐 1h

Predictability and ensemble forecast systems. Training course programme

Wednesday, 6 November

Time	Session		
09:15 → 10:15	**Initialisation techniques in coupled forecasting** Speaker: Magdalena Alonso Balmaseda (ECMWF) 📄 Slides	📍	🕐 1h
10:15 → 10:45	**Coffee break**	📍	🕐 30m
10:45 → 11:40	**Model uncertainty** Speaker: Sarah-Jane Lock (ECMWF) 📄 Slides	📍	🕐 55m
11:40 → 11:45	**Comfort break**	📍	🕐 5m
11:45 → 12:45	**Ensemble verification (1)** Speaker: Martin Leutbecher (ECMWF) 📄 Slides	📍	🕐 1h
12:45 → 13:45	**Lunch break**	📍	🕐 1h
13:45 → 14:40	**Poster session**	📍	🕐 55m
14:40 → 14:45	**Comfort break**	📍	🕐 5m
14:45 → 15:40	**Diagnostics (2)** Speaker: Mark Rodwell (ECMWF) 📄 Slides	📍	🕐 55m
15:40 → 16:00	**Coffee break**	📍	🕐 20m
16:00 → 17:00	**Overview of forecast systems in extended and long range** Speakers: Frederic Vitart (ECMWF), Tim Stockdale (ECMWF) 📄 Slides (Stockdale) 📄 Slides (Vitart)	📍	🕐 1h

18:00 dinner (non-hosted) at Zero Degrees

Thursday, 7 November

Time	Session		
09:15 → 10:15	**Ensemble verification (2)** Speaker: Martin Leutbecher (ECMWF) 📄 Slides	📍	🕐 1h
10:15 → 10:45	**Coffee break**	📍	🕐 30m
10:45 → 11:40	**Post-processing and calibration Reforecasts - reliability diagrams** Speaker: Tim Stockdale (ECMWF) 📄 Slides	📍	🕐 55m
11:40 → 11:45	**Comfort break**	📍	🕐 5m
11:45 → 12:45	**Weather regimes and teleconnections** Speaker: Linus Magnusson (ECMWF) 📄 Slides	📍	🕐 1h
12:45 → 13:45	**Lunch break**	📍	🕐 1h
13:45 → 14:40	**Practical session using SciLab (TBC)** Speakers: Antje Weisheimer (ECMWF), Martin Leutbecher (ECMWF), Sarah-Jane Lock (ECMWF), Zied Ben Bouallegue (ECMWF) 📄 Part1 📄 Part2 📄 Part3 📄 Part4	📍	🕐 55m
14:40 → 14:45	**Comfort break**	📍	🕐 5m
14:45 → 15:40	**Practical session continued** Speakers: Antje Weisheimer (ECMWF), Martin Leutbecher (ECMWF), Sarah-Jane Lock (ECMWF), Zied Ben Bouallegue (ECMWF)	📍	🕐 55m
15:40 → 16:00	**Coffee break**	📍	🕐 20m
16:00 → 17:00	**Practical session continued** Speakers: Antje Weisheimer, Sarah-Jane Lock (ECMWF), Zied Ben Bouallegue (ECMWF)	📍	🕐 1h

Friday, 8 November

Time	Session		
09:15 → 10:15	**Assessing the skill of long-range forecast & the predictability paradox** Speaker: Antje Weisheimer 📄 Slides	📍	🕐 1h
10:15 → 10:45	**Coffee break**	📍	🕐 30m
10:45 → 11:40	**Post-processing with ML** Speaker: Mariana Clare (ECMWF) 📄 Slides	📍	🕐 55m
11:40 → 11:45	**Comfort break**	📍	🕐 5m
11:45 → 12:45	**Question and Answer Session**		🕐 1h

Good luck with the training!

ECMWF   EUROPEAN CENTRE FOR MEDIUM-RANGE WEATHER FORECASTS