

Data assimilation training

Chris Stewart

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European Centre for Medium-Range Weather Forecasts (ECMWF)

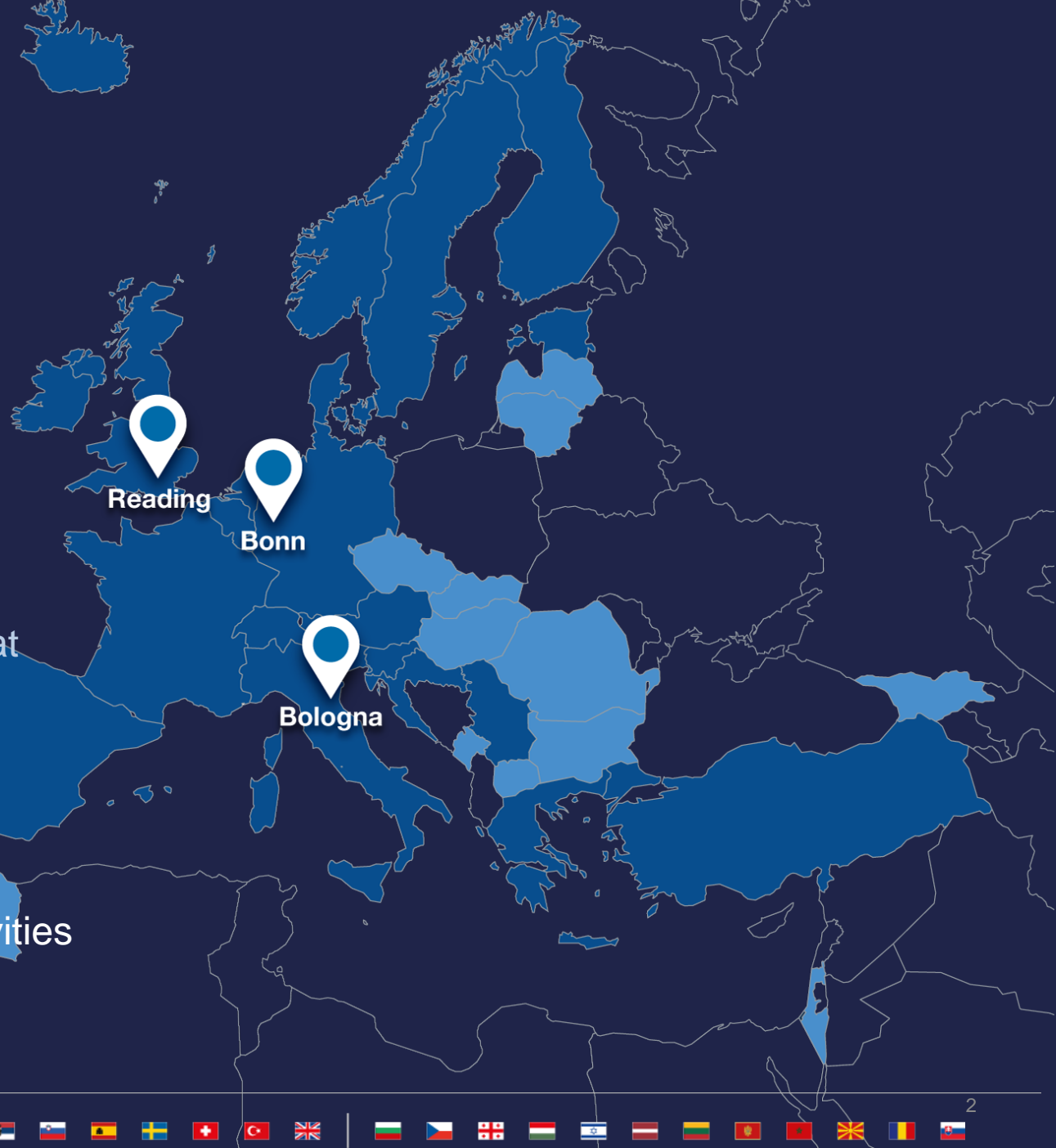
ECMWF is an international organisation with

- 23 Member States
- 12 Cooperating States

Three sites: one unique role

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

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



	Monday 22 May	Tuesday 23 May	Wednesday 24 May	Thursday 25 May	Friday 26 May
09:00-10:00	Introductions Andy Brown, Esperanza Cuartero, Students	Assimilation Algorithms: (3) 4D-Var Sebastien Massart <i>GROUP PHOTO AT 10:00</i>	Bias correction methods Niels Bormann	Data Assimilation Diagnostics – Forecast Sensitivity Alan Geer	Data Assimilation of Atmospheric Composition Richard Engelen
10:00-10:20		<i>Coffee break</i>			
10:20-11:20	Overview of Assimilation Methods Massimo Bonavita	Analysis of radiance observations Tony McNally	Background error modelling in Data Assimilation Elias Holm	Coupled Data Assimilation: opportunities and challenges Phil Browne	Ocean Data Assimilation Hao Zuo
11:20-11:30		<i>Comfort break</i>			
11:30-12:30	Assimilation Algorithms: (1) Basic concepts Sebastien Massart	Assimilation Algorithms: (4) Ensemble Kalman filters Massimo Bonavita	Model error in Data Assimilation Patrick Laloyaux	Land Data Assimilation Patricia de Rosnay	Reanalysis methods Dinand Schepers
12:30-13:30		<i>Lunch break</i>			
13:30-14:30	Conventional and actively sensed observations Sean Healy	Parameterization and Data Assimilation Philippe Lopez	Assimilation Algorithms: (5) Hybrid Data Assimilation methods Massimo Bonavita	Practical Session: DA experiments P. Laloyaux, M. Chrust, M. Bonavita	Data Assimilation and Machine Learning Alan Geer
14:30-14:50		<i>Coffee break</i>			
14:50-15:50	Assimilation Algorithms: (2) 3D-Var Sebastien Massart	Tangent Linear and Adjoint Marcin Chrust	Practical Session: DA experiments Patrick Laloyaux, Marcin Chrust, Massimo Bonavita		Final Discussion, Q and A M. Bonavita, E. Holm, S. Massart, M.Chrust, P. Laloyaux
15:50-16:45		Practical Session: Tangent Linear & Adjoint M. Chrust, S. Massart			
16:45		<i>ICEBREAKER</i>			

Certificate of attendance & course material

- Presentations will be available via course website:
 - <https://events.ecmwf.int/event/333/timetable/>
- Certificate of attendance awarded at end of course

The screenshot shows the ECMWF website's training course page. The main navigation bar includes Home, About, Forecasts, Computing, Research, Learning, and Publications. The current page is titled 'Training course: Data assimilation' and features a sidebar with links to Overview, Timetable, Code of conduct, 2023 Covid-19 Health and Safety Guidance, Accessibility, and Contact. The main content area displays a timetable for Monday, 22 May, with a dropdown menu set to 'Europe/London'. The events listed are:

Time	Event	Duration
09:00 → 10:00	Introductions Speakers: Andy Brown (ECMWF), Esperanza Cuartero, Students	1h
10:00 → 10:20	Coffee break	20m
10:20 → 11:20	Overview of assimilation methods Speaker: Massimo Bonavita (ECMWF)	1h
11:20 → 11:30	Comfort break	10m
11:30 → 12:30	Assimilation Algorithms: (1) Basic concepts Speaker: Sebastien Massart (ECMWF)	1h
12:30 → 13:30	Lunch break	1h

The certificate is titled 'TRAINING COURSE' and features the ECMWF logo. It certifies that 'XXX' participated in the 'Data Assimilation' course, held at ECMWF from May 22 to 26, 2023. The certificate notes that the course consisted of 27 hours of lectures and practical extensions. It is signed by Andrew Brown, Director of Research, on May 26, 2023. The background of the certificate shows a sky with clouds and a colorful horizontal bar.

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

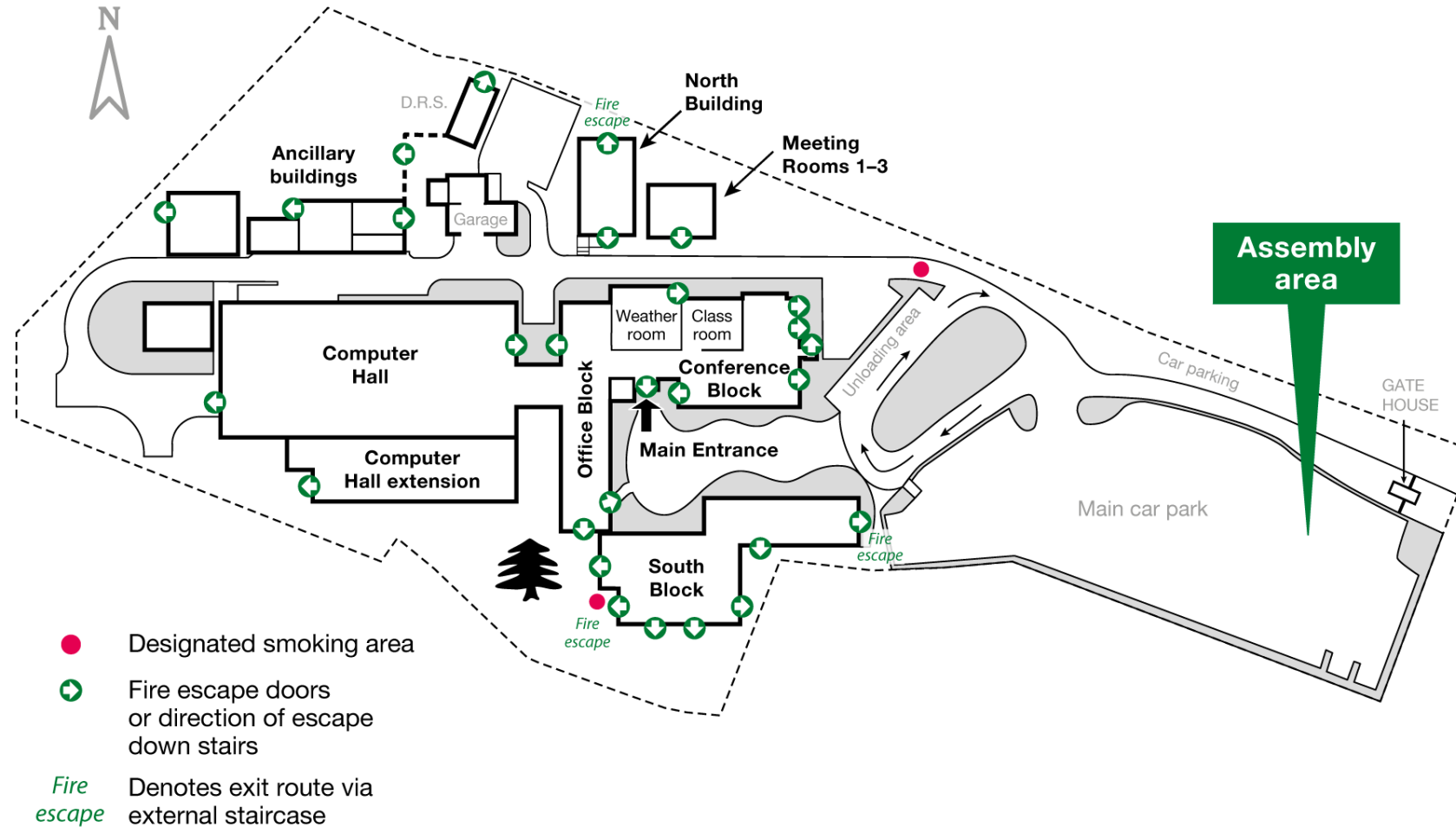
- If you have any questions, please contact the Reception Desk who will liaise with the course organisers.

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



Visitor WiFi

Follow these steps to use the visitor WiFi.

1. From the list of available SSIDs, select "ECMWF-Visitors-Self-Register"
2. Enter your details in the appropriate boxes on the registration screen and press the Register button.
3. You will be redirected to a page that informs you of a successful registration and provides your personal Access key.
4. Select "ECMWF-Visitors" from the list of available SSIDs and enter the Access key to connect.

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.



Good luck with the training!