

# Radar-based ensemble precipitation nowcasting course

**When:** Sunday 1 July 2018, prior to the ERAD conference  
**Where:** Hotel Reehorst, Ede-Wageningen, The Netherlands

## For whom:

This one-day-course is intended for both graduate students, newcomers to the field and established nowcasting scientists. We will organize group activities to stimulate interaction among all participants.

## Course aims:

The goal of the course is twofold:

- Allow the students to learn the basics of radar-based ensemble precipitation nowcasting and blending with NWP, as well as understanding the main scientific challenges.
- Allow the experts of the field to discuss the scientific questions that are still open and require further investigation.

The course will be organized around the following 5 main questions:

1. How to bring precipitation nowcasting beyond the simple deterministic extrapolation of radar precipitation echoes?
2. How to represent the uncertainty of precipitation nowcasts?
3. How to take into account spatial and temporal non-stationarity in the stochastic simulation of precipitation fields?
4. How to optimally blend radar-based extrapolation nowcasts and NWP forecasts for short-term probabilistic nowcasting?
5. How to exploit the information contained in large radar data archives to improve the skill of precipitation nowcasts?

At the time of the registration you should send 1-2 scientific nowcasting questions that you would like us to develop further and discuss during the course. The questions could either help you understanding better some basic concepts and algorithms, such as the working of a semi-Lagrangian advection scheme, or generate a debate on a more fundamental topic, such as the limits of precipitation predictability.

## Instruction:

The course is organized by Loris Foresti, Daniele Nerini and Urs Germann (MeteoSwiss), Seppo Pulkkinen (Finnish Meteorological Institute) and Alan Seed (Australian Bureau of Meteorology).

You will do practical exercises in python to learn basic nowcasting concepts. You will receive the scripts before the course so that you can test the needed libraries. In case you are not familiar with python or the installation does not work: no worries! You can simply work with and interact with your neighbour.

After the introductory talks we will organize group activities to allow both beginners and experts to take maximum advantage from the course.

## Registration:

Please register to the course at the same time you register to the conference.

The deadline for registration is 27 April 2018.

The course price includes lunch and is 75 € per participant.

## Tentative program:

Time	Content	Duration		
09:00 - 09:10	Welcome and overview of the course	10		
09:10 - 09:45	Introduction to <b>deterministic</b> radar-based precipitation nowcasting <ul style="list-style-type: none"><li>- <i>Eulerian vs Lagrangian persistence</i></li><li>- <i>Estimation of radar echo motion and optical flow</i></li><li>- <i>Extrapolation of radar precipitation echoes</i></li></ul>	35		
09:50 - 10:15	Introduction to <b>stochastic ensemble</b> radar-based precipitation nowcasting	25		
10:20 - 10:45	Introduction to <b>analogue ensemble</b> radar-based precipitation nowcasting	25		
10:45 - 11:15	Coffee break	30		
11:15 - 11:40	Scale-dependence of the <b>predictability</b> of precipitation <ul style="list-style-type: none"><li>- <i>Wavelet decomposition (MAPLE)</i></li><li>- <i>Fourier decomposition (S-PROG)</i></li></ul>	25		
11:45 - 12:25	Introduction to <b>blending</b> of radar-based nowcasts and NWP <ul style="list-style-type: none"><li>- The STEPS approach -&gt; using the model skill</li><li>- The ensemble Kalman filter approach -&gt; using the model spread</li></ul>	40		
12:30 - 13:30	Lunch break			
	<b>Interactive groups. Part I</b>			
13:30 - 14:00	Fundamental basics	Python users	Advanced topics	30
14:00 - 15:00	Python users	Advanced topics	Advanced topics	30
15:00 - 15:30	Coffee break			
	<b>Topics:</b>	<b>Interactive groups. Part II</b>		
15:30 - 16:00	Fundamental basics	Python users	Advanced topics	30
16:00 - 16:30	Python users	Advanced topics	Advanced topics	30
16:30 - 17:00	General questions and follow-up			

## Contact information:

For more information about the course please contact:

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