baltrad

advanced weather radar networking with baltrad+

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what is baltrad?

Project(s)	+ Partly funded by the EU's Baltic Sea Region Programme + First time that European money is being used for establishing a weather radar network, not as a prototype or proof-of-concept, but as a real-time element of regional infrastructure. + Main-stage project February 2009 - January 2012. + BALTRAD+ January 2012 - December 2013
Partnership	+ Swedish Meteorological and Hydrological Institute + Finnish Meteorological Institute + Institute of Meteorology and Water Management, Poland + Latvian Environment, Geology and Meteorological Centre + Danish Meteorological Institute + Republican Hydrometeorological Center, Belarus + Lithuanian Hydrometeorological Service + Finnish Radiation and Nuclear Safety Authority + Estonian Meteorological and Hydrological Institute + Department of Civil Engineering, University of Ålborg, Denmark + Århusvand A/S, Denmark + Norwegian Meteorological Institute + German Weather Service

what is baltrad?

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Network	+ Real-time exchange of polar weather radar data + ~60 C-band radars in 10 countries, X-band as PoC + Emerging mechanisms for handling radar data in WMO Information System (WIS) + Decentralized concept allows each partner to process all data according to their local needs
Software	+ Open Source : Lesser Gnu General Public License + Publicly released on 24 January 2012 → git.baltrad.eu + Whole system written in C/C++, Java, Python + A collection of modular sub-systems + Successfully trialed in EUMETNET OPERA to improve the quality of European composites (BALTRAD toolbox)

git.baltrad.eu

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Frequently Asked Questions ×

git.baltrad.eu

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Frequently Asked Questions and User Guide

Main Page	Related Pages

Community-based weather radar networking

Date:
January 2012

Version:
1.0

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on behalf of the BALTRAD partnership

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Introduction

Welcome to BALTRAD! This page is the first place to come to become aquainted with us. We hope you will like what you see and read.

We have divided up this documentation into a Frequently Asked Questions (FAQ) part, and a User Guide part. The FAQ should probably be consulted first, because it will help you understand what BALTRAD is, and the principles guiding it, whereas the User Guide is more focussed on helping you get started with the system. Another way of putting it is that the FAQ will give you an overview and the User Guide will give you more substance.

The finest level of detail will be available in each software package's documentation, which is available when it is built. If you build a so-called "BALTRAD node", the documentation of the packages you decide to build will be built automatically, and that is where to look for such details.

Enjoy!

TAKE ME TO ...

Frequently Asked Questions

trac wiki / management system

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Welcome to the BALTRAD software wiki

Looking for the BALTRAD Cookbook?

RELEASES

The latest official release is **1.2-beta4**. This is as it says a beta release for the upcomming 1.2 release that is planned for end of june.

This release contains a number of corrections related to authentication between nodes.

To fetch.

```
%> git clone ⇨ git://git.baltrad.eu/node-installer.git
%> cd node-installer
%> git checkout 1.2-beta4
```

or if you already have a source repository that you have built from you can speed up the process by doing

```
%> cd node-installer
%> git checkout master
%> git pull
%> git checkout 1.2-beta4
```

Release 1.2-beta4

Release date: 2012-06-21

Changes from 1.2-beta1

BALTRAD-DEX:

- Ticket 120: Enable password encoding for spring-security form login
- Ticket 117: Error when in Home i press Browse files and next press on Details
- Ticket 113: Use spring security package

RAVE:

cookbook

You are welcome to participate and contribute!

# cookbook roadmap

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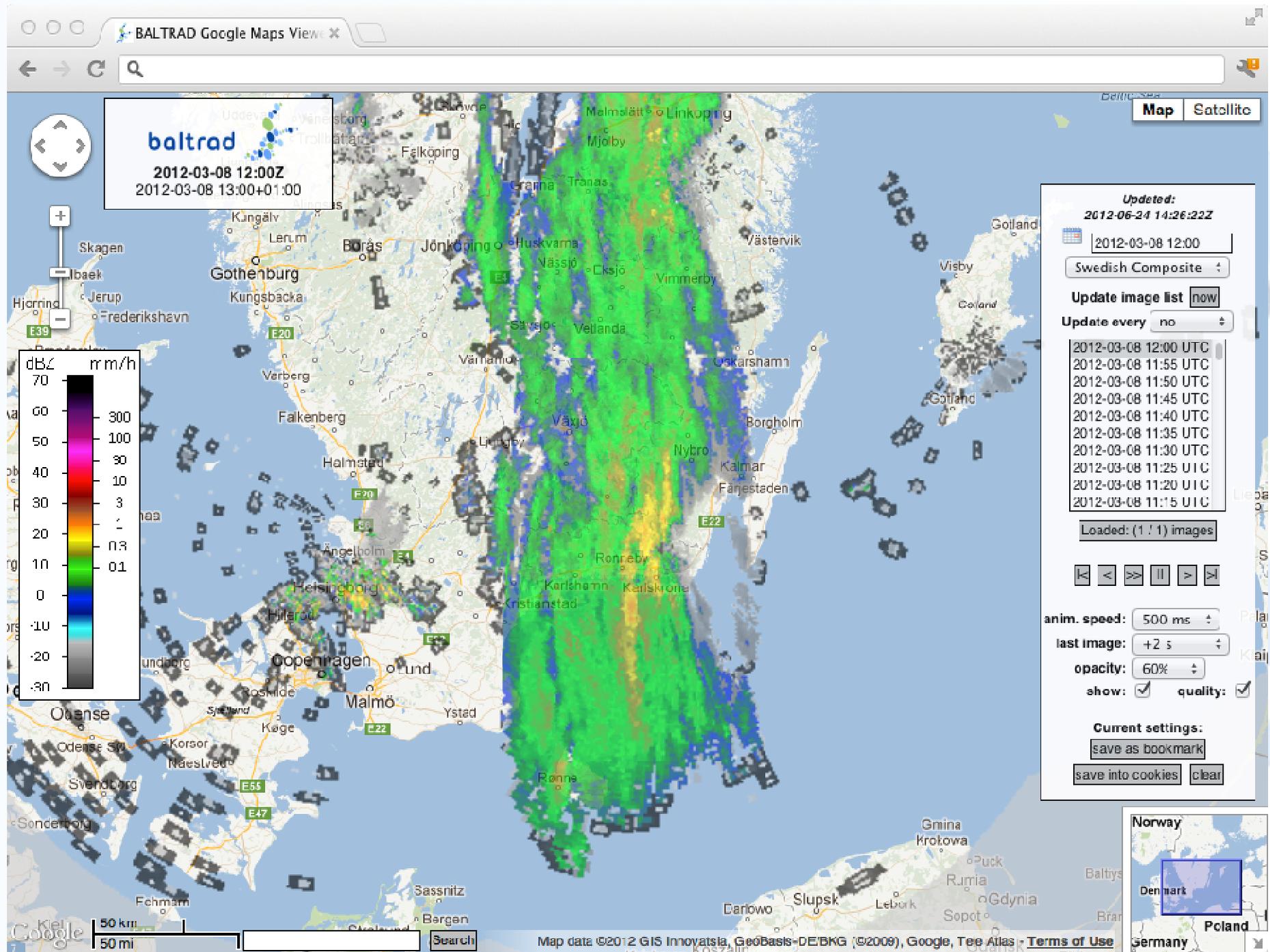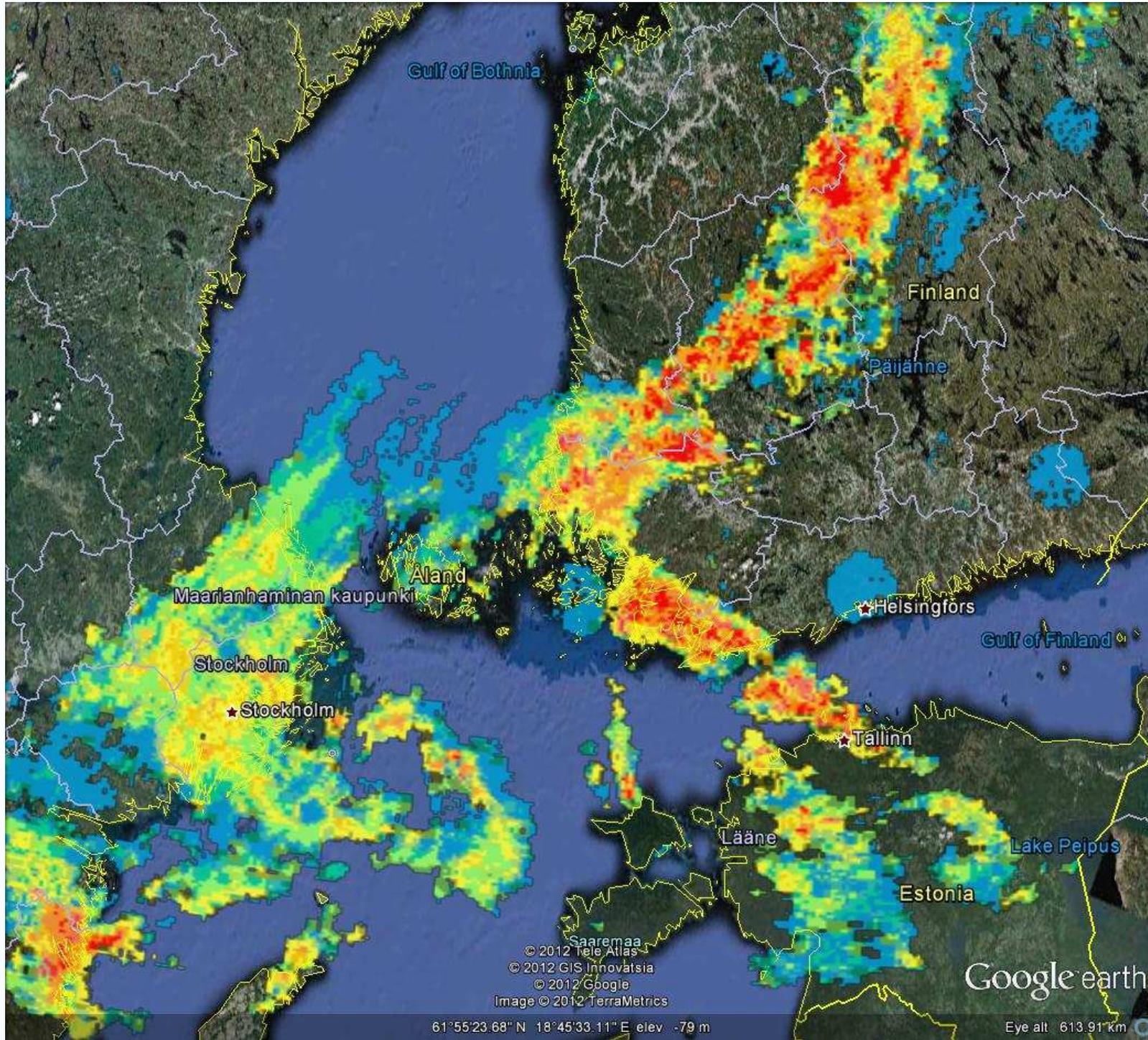| Topic	Algorithm developer	Priority in Baltrad+ development	Recipe written (period = 6 months)	Implemented: either working version or fully operational (period)	Software developer	Comments	Links
Accumulation (mm)	FMI (**Jarmo 0.5 wm ?, Harri 0.5 wm ?**), SMHI	+++	1	1	SMHI	Incorporates all the improvements to the ground level dBZ, precipitation intensity and horizontal movement (see the respective algorithms below). *Requires clarification of the components included here.*	
Satellite-based diagnosis and removal of clutter	SMHI	+++	1	2	SMHI	Requires functionality to read satellite product	
Polarimetric classification of scatterers	FMI (**Teemu 1 wm**), DMI	+++	1 (FMI 2)	1	DMI	DMI to make HMC useable. FMI requires R&D before implementation	
Pointing angle applying the Sun	FMI (**Mikko, Asko**), SMHI	+++	1	1	SMHI	Requires that partners include relevant metadata	
Real time power calibration applying the Sun	FMI (**Mikko, Asko**)	+++	2?		SMHI?	FMI requires R&D before implementation	
Diagnosis of the height and intensity of the bright band	FMI (**Jarmo 0.5 wm /VPR output**), SMHI	+++	**2**	**3**	FMI (**Harri 1 wm**), SMHI (Günther),	Diagnostics readily available from the existing VPR-correction. Requires that melting-layer heights be available from NWP.	
Near-range beam blockage correction applying radar data (**without DEM**)	FMI (**Harri 0.5 wm**)	+++	2	3	**FMI (Joonas 2 wm)**	**Based on accumulations per azimuth. Requires high-precision ie. 16-bit Z data.**	
Polarimetric path attenuation correction	FMI (**Pekka R**), DMI	+++	1 (FMI 1)	1	DMI	Make this functionality stand-alone. At FMI the solution is obtained from Vaisala (Reino). Derivation either in DSP or in post-proseccing. Only the latter solution is applicable for Baltrad+.	
Non-polarimetric path	IMGW **FMI (Timo 0.5**	+++	1(FMI	1(FMI 1)	IMGW (Kate) **FMI (Timo 1**	**FMI contribution depends on product generation framework**	

hydrometeor classification
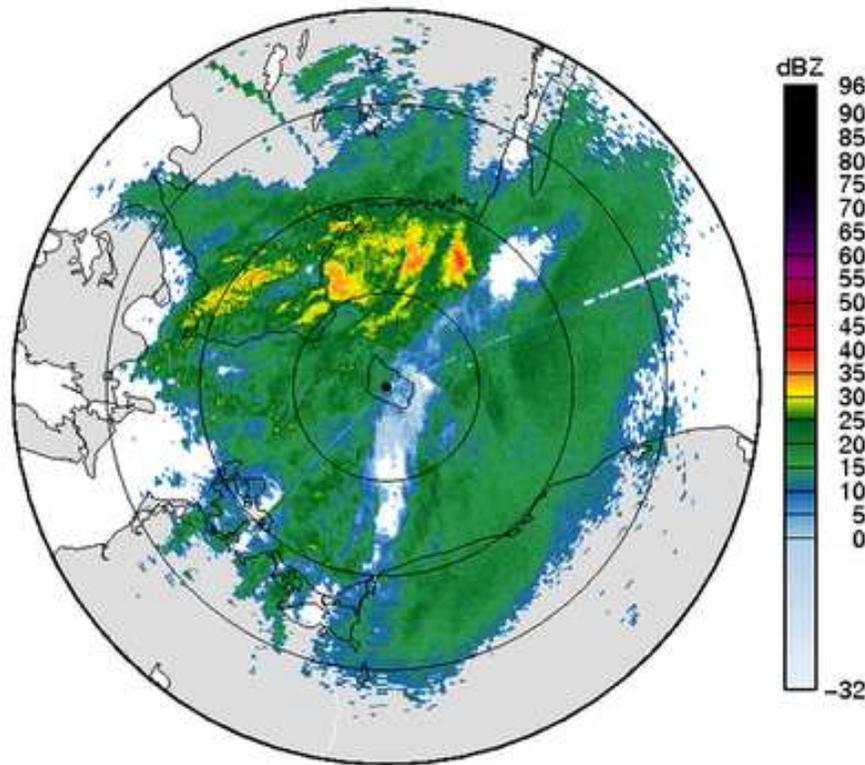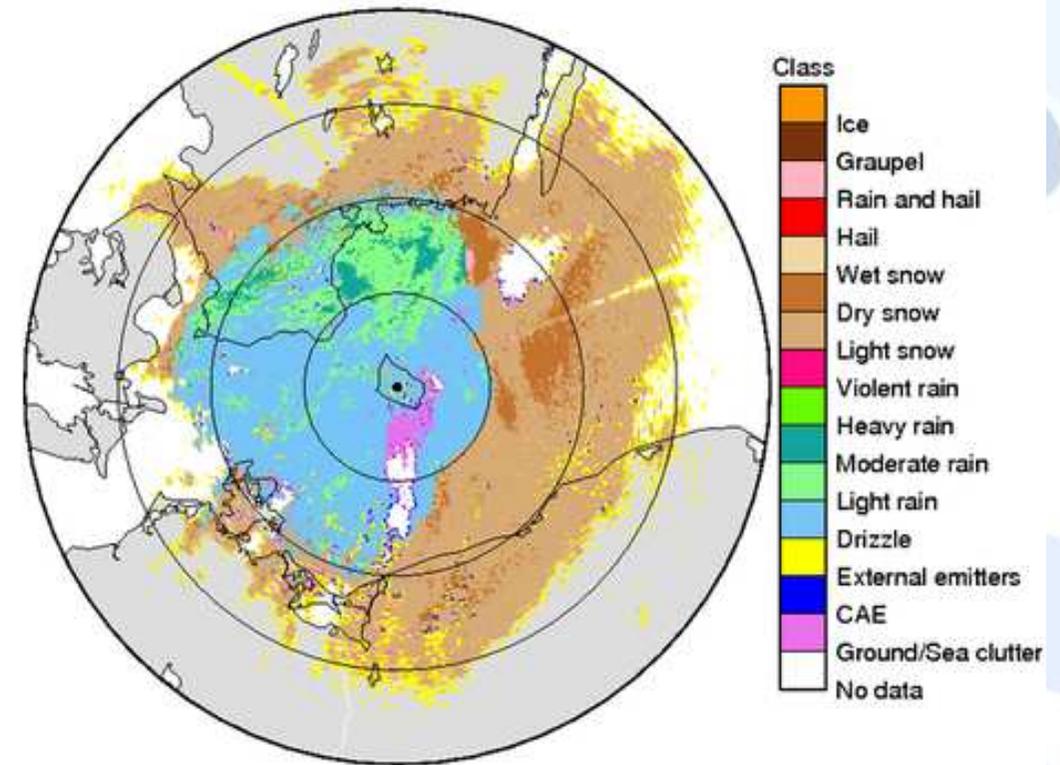
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- Gill *et al.*, Microphysics part I
- Software-based

google maps – quality layer(s)
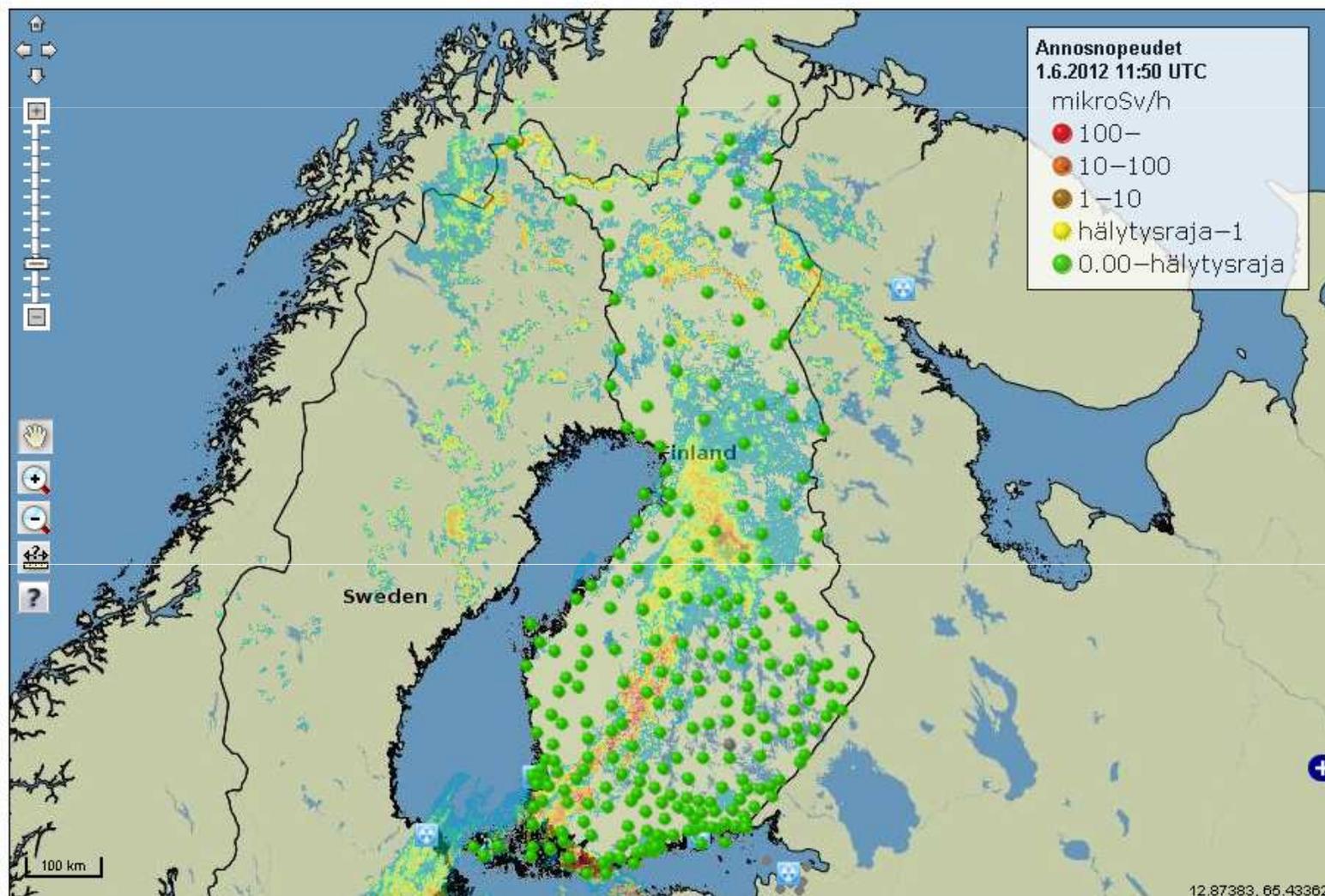
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Data Quality in BALTRAD+
Szturc et al. DQ

google earth

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radiation monitoring

Radar-based precipitation rates with dose rates from surface network

nuclear emergencies

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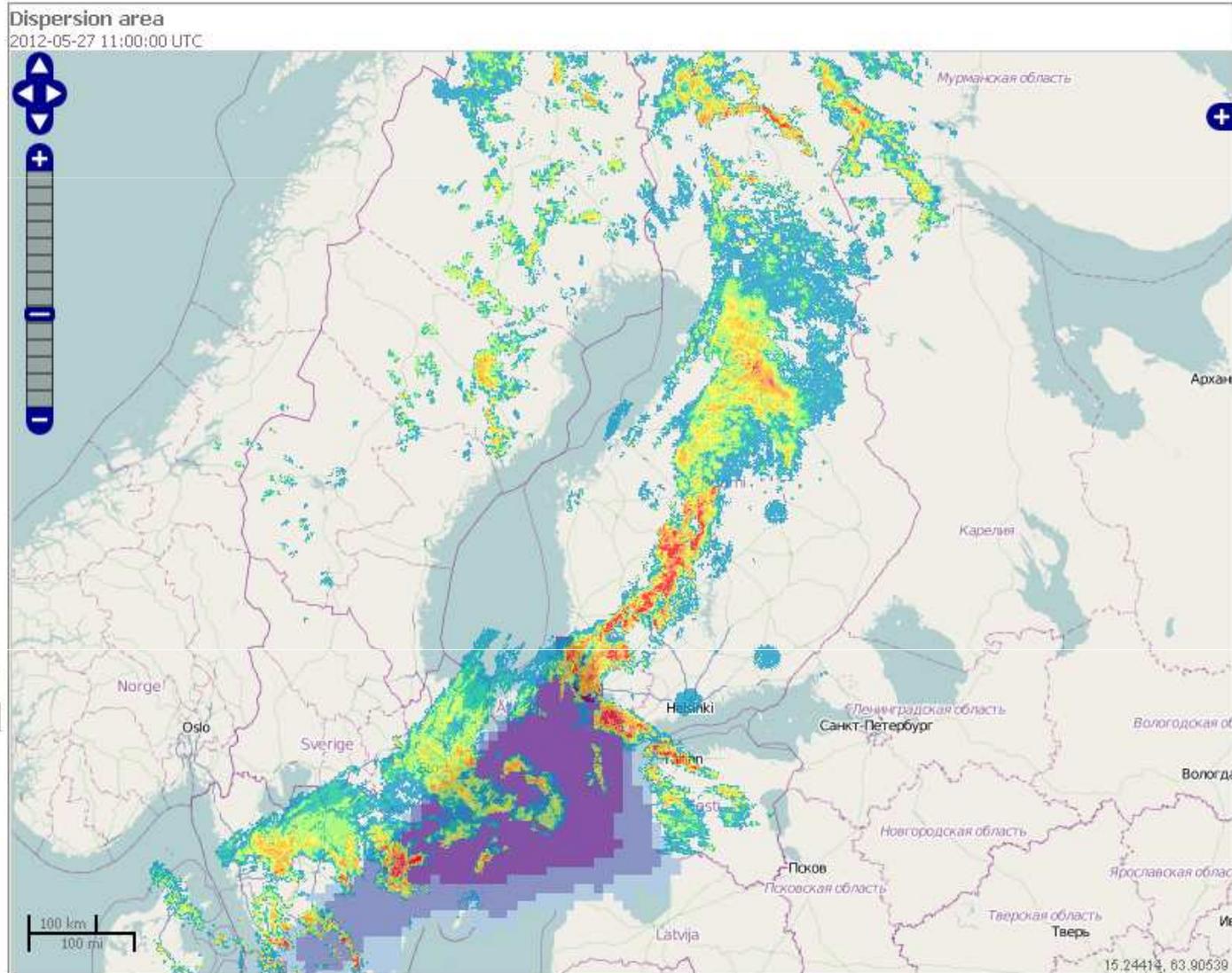
OGC Web Map Services solution showing radar-based precipitation rates and particle-concentration distributions from dispersion model.

transfer to X-band
in support of urban applications
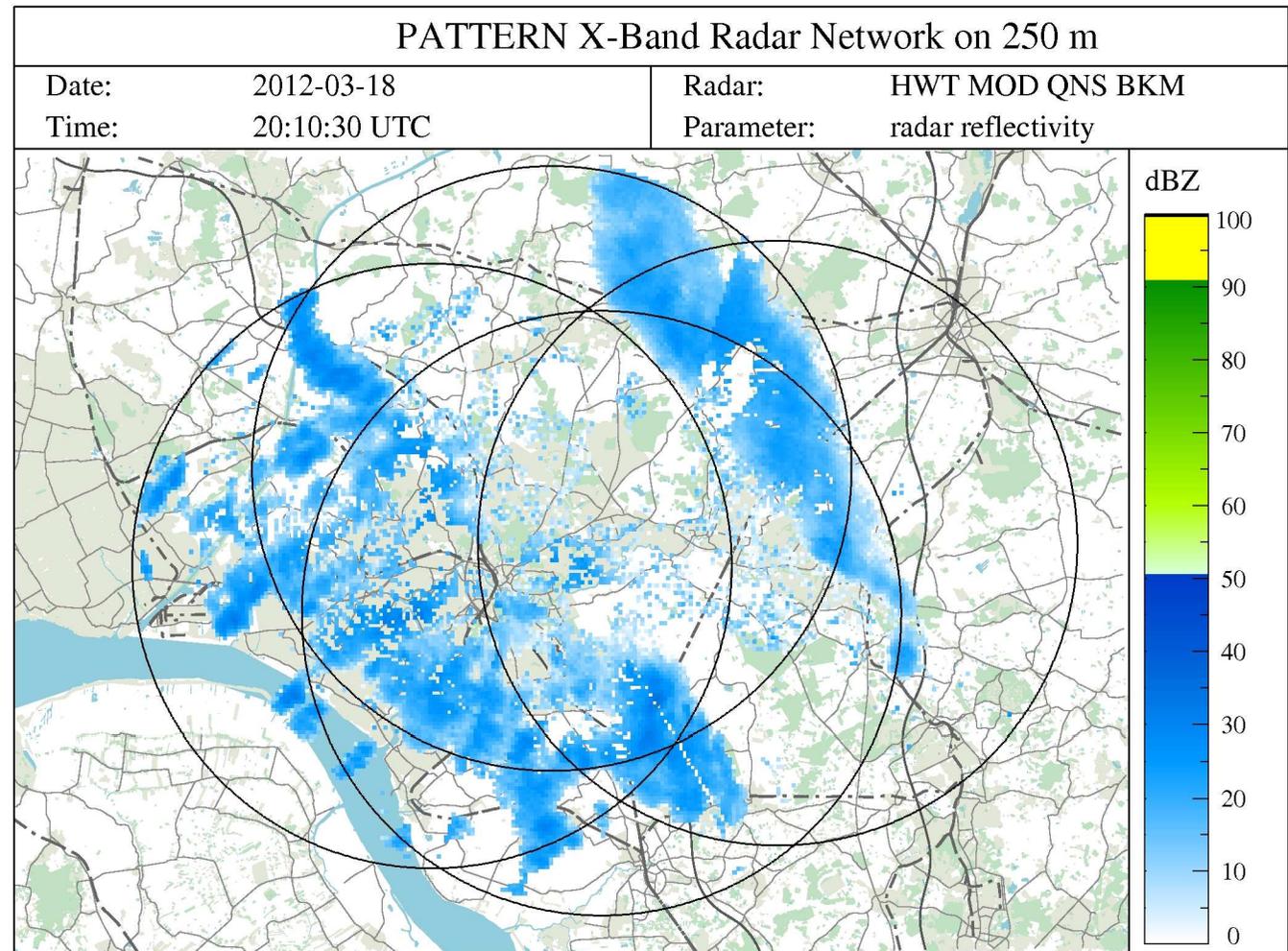
C-band polarimetric
X-band LAWR
near Århus, Denmark

PATTERN X-Band Radar Network on 250 m

Date:	2012-03-18	Radar:	HWT MOD QNS BKM
Time:	20:10:30 UTC	Parameter:	radar reflectivity

dBZ

100
90
80
70
60
50
40
30
20
10
0

Preliminary result
Courtesy: Katharina Lengfeld, Hamburg University
See Networking part II, Thursday

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continental scale
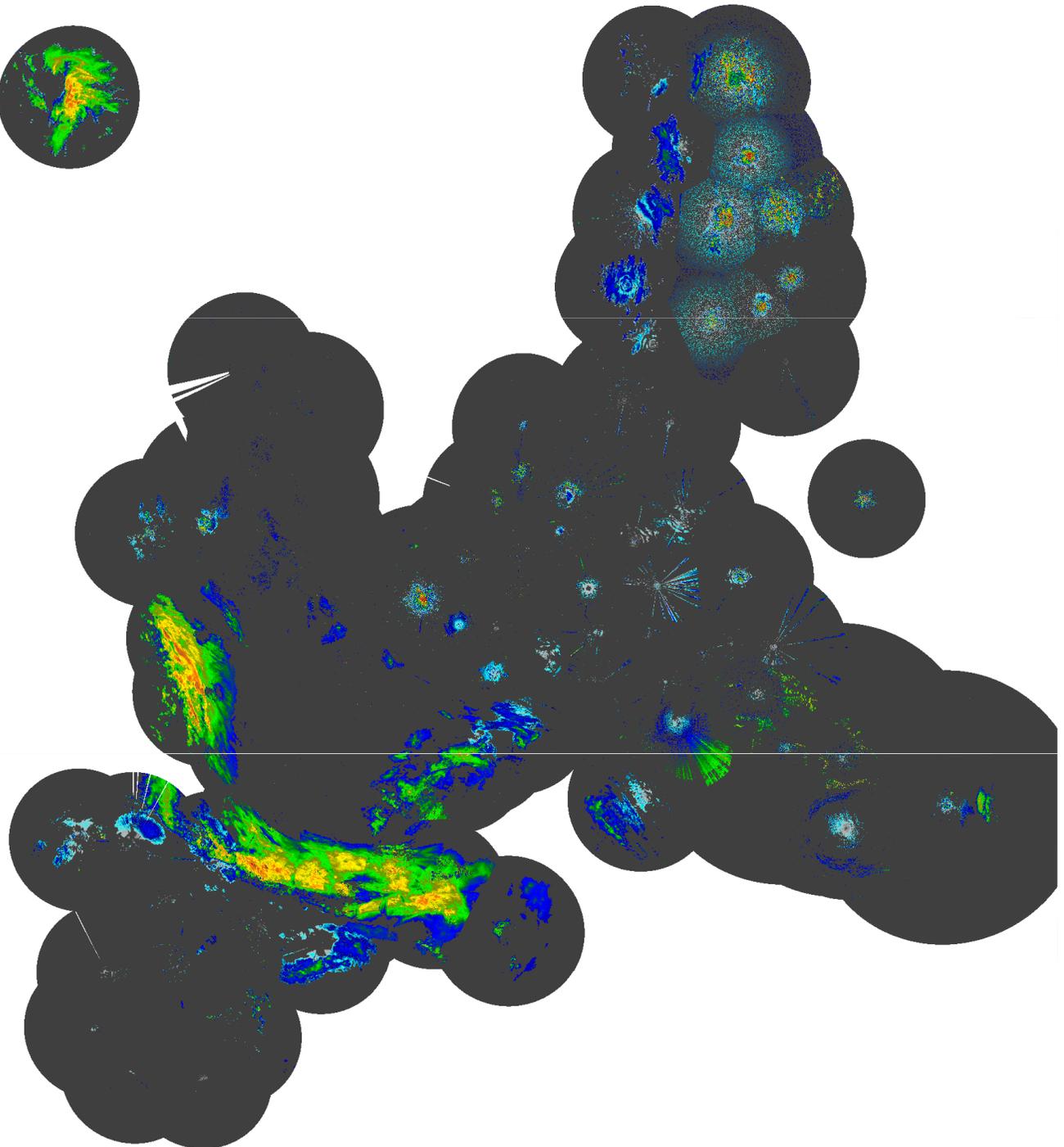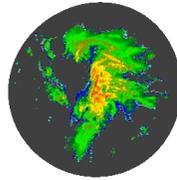
Application of the
BALTRAD toolbox
for EUMETNET OPERA.

Composites consist of
uncorrected and corrected
reflectivities, each with
four quality indicator
datasets.

Quality improvements are
apparent and measurable.

Output in ODIM_H5

Henja & Michelson, DQ

uncorrected

continental scale

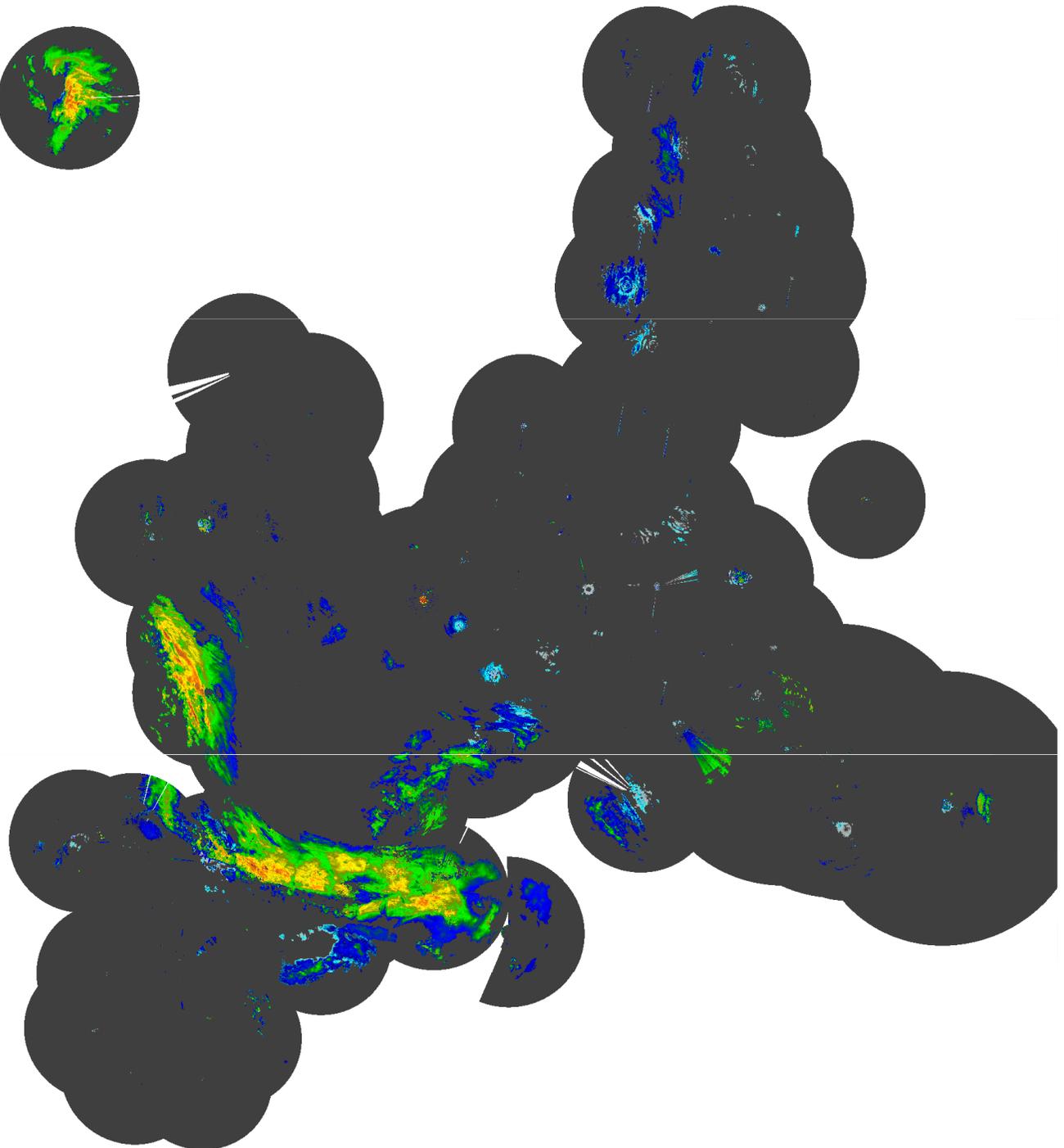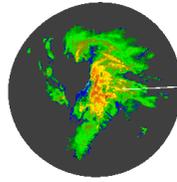Application of the BALTRAD toolbox for EUMETNET OPERA.

Composites consist of uncorrected and corrected reflectivities, each with four quality indicator datasets.

Quality improvements are apparent and measurable.

Output in ODIM_H5

Henja & Michelson, DQ

corrected

take-home messages

BALTRAD+ offers Open Source technology for advanced radar networking and data processing.

The community is welcome to contribute to the cookbook and software developments.

BALTRAD User Forum offers users of the system and the data the chance to meet and train, give feedback.

resources

Project website	http://baltrad.eu/
FAQ & User guide	http://git.baltrad.eu/
Software	http://git.baltrad.eu/trac
Toolbox API Cheat sheet	http://git.baltrad.eu/manual/cheatsheet/
Cookbook	http://git.baltrad.eu/trac/wiki/cookbook/
BALTRAD Facebook community	

Look for BALTRAD User Forum!