



Division Meeting

Cryospheric Sciences (CR)

Room Y1, Thursday 1 May 2014, 12:15-13:00





Agenda

- Meeting statistics
- CR officers and secretaries, medal committee,
- Medals and awards
- Publications: The Cryosphere
- General discussion

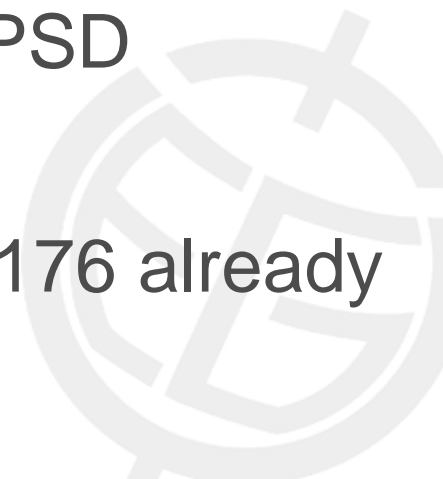




EGU General Assembly 2014 Facts

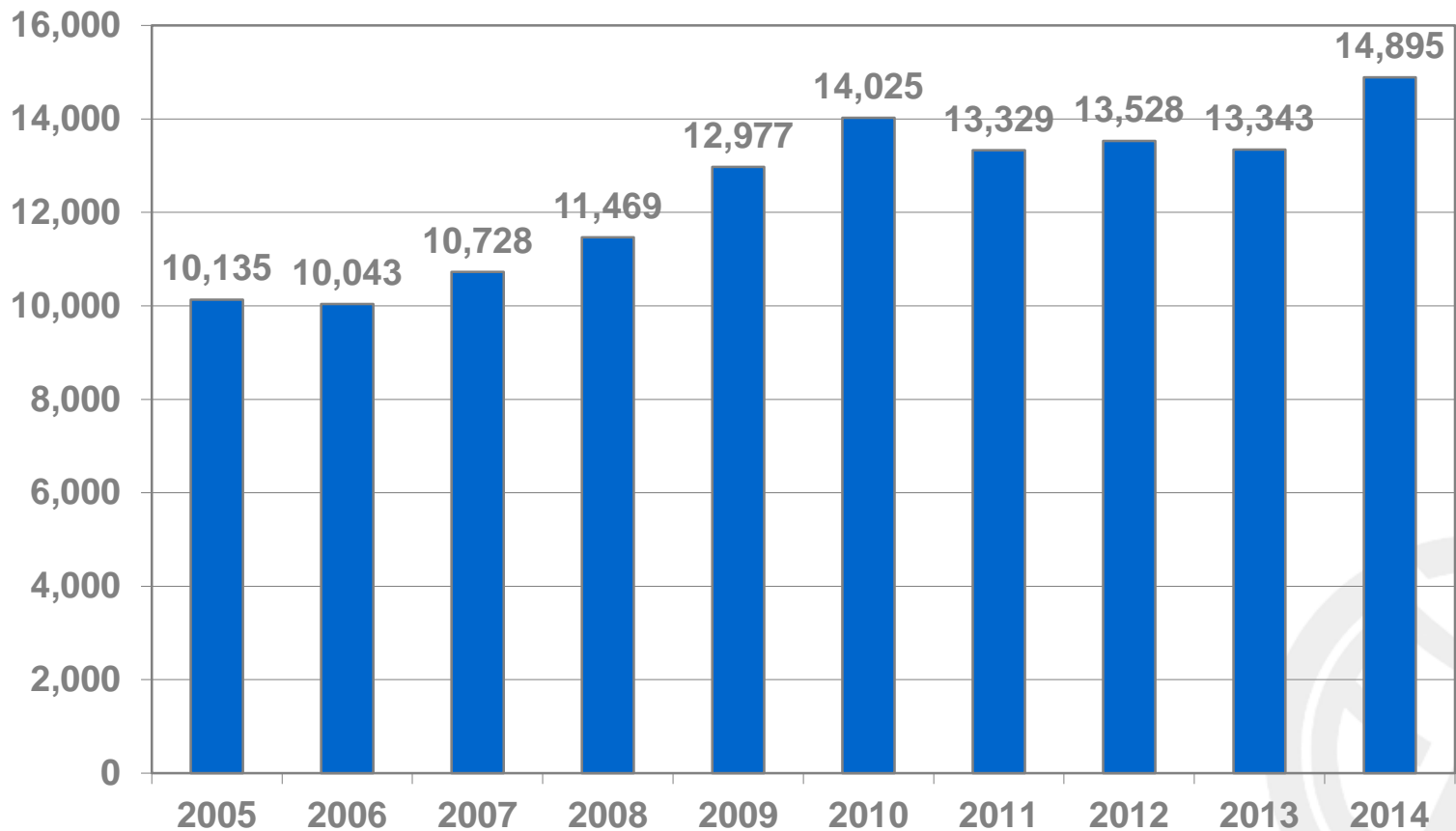
As of 26 April, the Assembly 2014 provides:

- 14,895 Papers in Programme | +11.6% (2013)
- 4,829 Orals | 9,583 Posters | 483 PICOs | Ratio 32 / 64 / 3
- 568 unique scientific Sessions | 126 PSD Sessions | 245 Side Events*
- 10,261 Registrations in Advance (10,176 already paid) | +3.9% (2013)



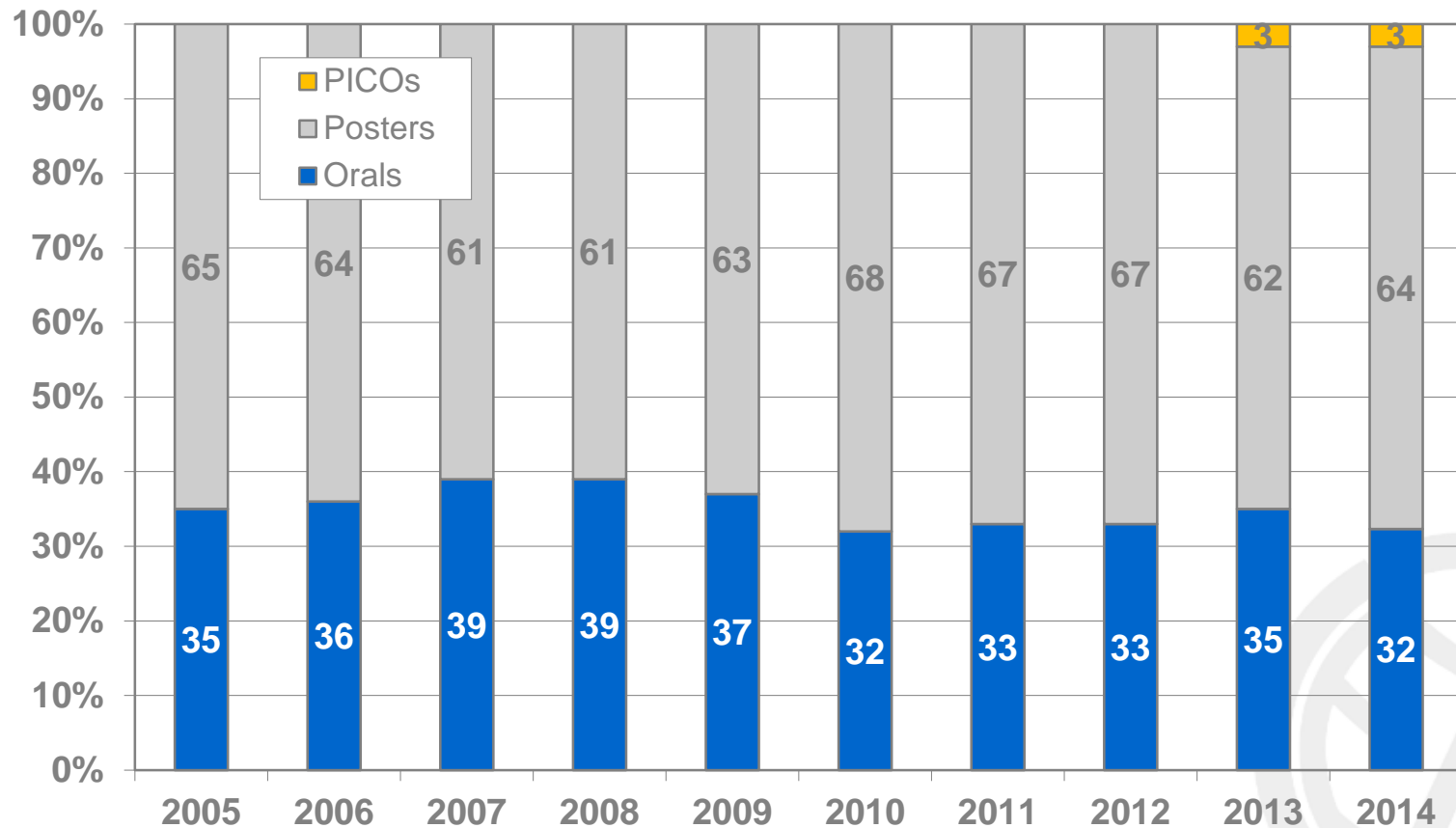


Abstracts in Programme 2005 - 2014



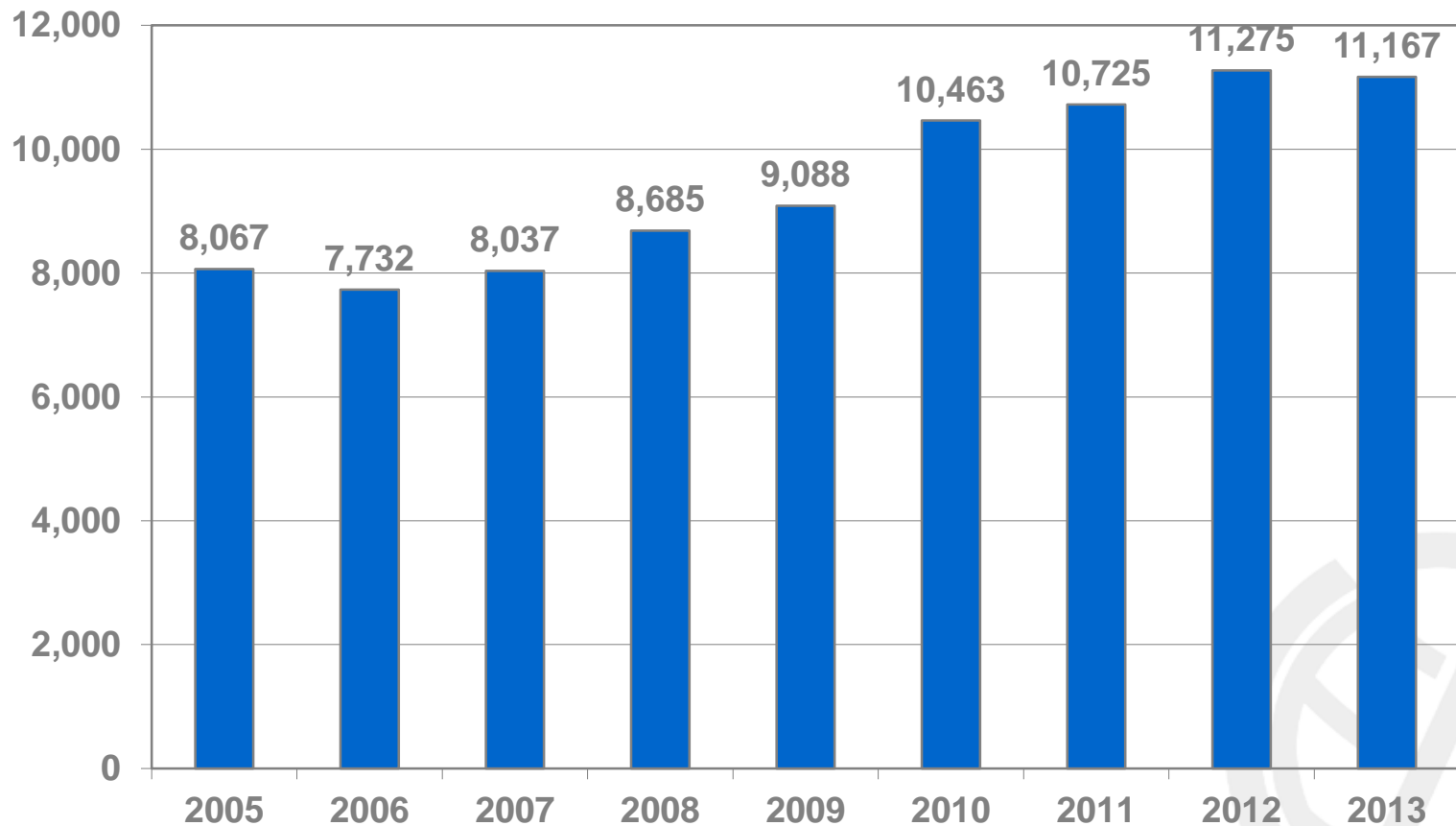


Presentation Ratio 2005 - 2014





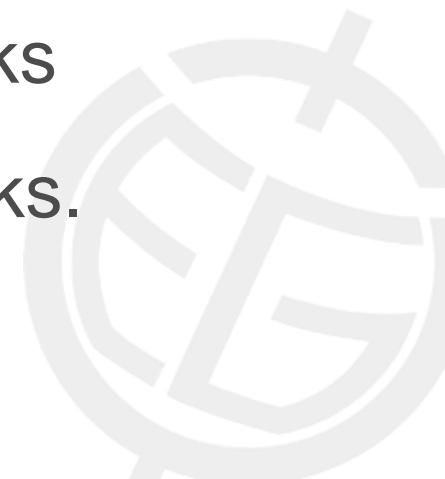
Participants at EGU Assemblies 2005-2013





CR Statistics

- 2014: 538 abstracts and 26 oral blocks / 2 PICOs (398 abstracts in 20 CR sessions: 21 oral blocks)
- 2013: 551 abstracts and 30 oral blocks
- 2012: 458 abstracts and 24 oral blocks
- 2011: 454 abstracts and 23 oral blocks
- 2010: 387 abstracts and 19 oral blocks.





Division Structure

Officers

President: Jürg Schweizer (2013-2015)

Vice President: Olaf Eisen: (2013-2015)

Medal committee: *Dorthe Dahl-Jensen* (2014-)

PC Chair: Jürg Schweizer (2013-2015)

OSP Award Coordinator: *Willem Jan van de Berg* (2014-

Young Scientist Rep.: *Nanna B. Karlsson* (2014-

EGU Journals: Jonathan L. Bamber

Outreach: *Olaf Eisen* (2014-



Division Structure

Secretaries

Sea Ice:	Daniel Feltham	(2012-)
Permafrost:	Michael Krautblatter	(2011-)
Glaciers:	<i>Matthias Huss</i>	(2014-)
Ice Sheets:	<i>Guðfinna Th. Aðalgeirsdóttir</i>	(2014-)
Ice Caps:	<i>Nick Barrand</i>	(2014-)
Ice Shelves:	<i>Adrian Jenkins</i>	(2014-)
Snow:	Henning Löwe	(2013-)



Division Structure

Louis Agassiz Medal Committee

Dorthe Dahl-Jensen, Chair (2014)

Julian. A. Dowdeswell (2011)

Ian Joughin (2012)

Florent Dominé (2013)

ex-officio member without voting rights:

Jürg Schweizer

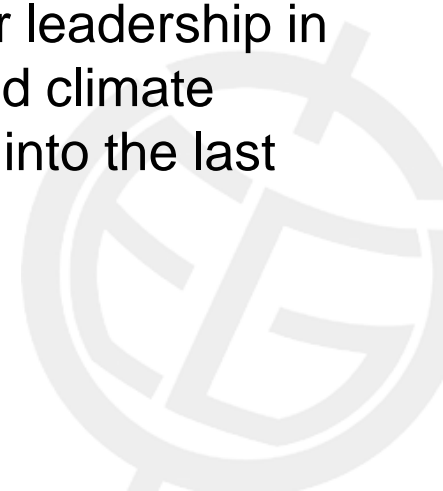


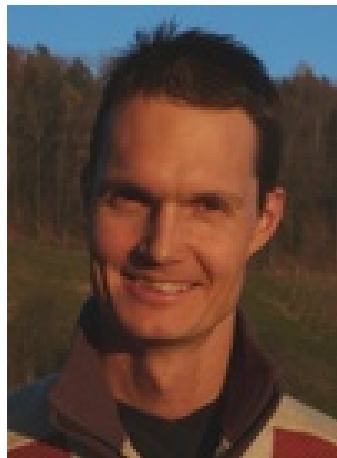


Louis Agassiz Medal Lecture by Dorthe Dahl-Jensen

Mon, 28 April, 19:00-20:00 / Room Y1

The 2014 Louis Agassiz Medal is awarded to Dorthe Dahl-Jensen for her outstanding scientific contributions in polar glaciology and her leadership in international projects that have extended climate records from Greenland ice cores back into the last interglacial.





Arne Richter Award for Outstanding Young Scientist Lecture by Matthias Huss

Wed, 30 Apr, 12:00-12:30 / Room Y1

The 2014 Arne Richter Award for Outstanding Young Scientists is awarded to Matthias Huss for innovative contributions to improving the understanding of the mass balance and runoff of glaciers and their sensitivity to climate change.





Outstanding Student Poster Award

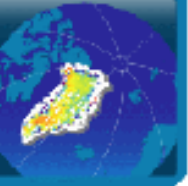
Joanna Fredenslund Levinsen

The 2013 Outstanding Student Poster (OSP) Awards is awarded to Joanna Fredenslund Levinsen for the poster entitled:

Validation and inter-comparison of surface elevation changes derived from altimetry over the Jakobshavn Isbræ drainage basin, Greenland – Round Robin results from ESA's Ice_Sheets_CCI

(Fredenslund Levinsen, J.; Khvorostovsky, K.; Ticconi, F.).

ESA Climate Change Initiative – Ice Sheets



Validation and inter-comparison of surface elevation changes derived from altimetry over the Jakobshavn Isbrae drainage basin, Greenland – Round Robin results from ESA's Ice_Sheets_CCI (ID #EGU2013-6007)

Joanna Fredenslund Levinsen (JFL@space.dtu.dk)¹, Kirill Khvorostovsky², Francesca Ticconi³

- 1) DTU Space, Technical University of Denmark, Building 327, Elektrovej, 2800 Kgs. Lyngby, Denmark
- 2) Nansen Environmental and Remote Sensing Center, Thormøhlens gate 47, 5006 Bergen, Norway
- 3) School of Earth and Environment, University of Leeds, Leeds LS2 9JT, United Kingdom

Abstract:

In order to ensure long-term climate records, ESA has launched the Climate Change Initiative (ESA CCI), which puts focus on 13 different Essential Climate Variables, one of them being Ice Sheets. In this program, four selected key parameters will be determined for the Greenland Ice Sheet: Surface elevation changes (SEC), surface velocities, calving front locations, and grounding line locations.

This work focuses on SEC, and the goal is to develop the best routine for estimating this by means of radar altimetry. In order to find the most optimal approach we have completed a Round Robin experiment (RR) in which researchers from various European and US institutions have provided SEC estimates derived from either Envisat radar or ICESat laser altimeter data. The test area was Jakobshavn Isbrae drainage basin, and by analyzing, inter-comparing and validating the results, we have found that a combination of repeat-track and cross-over analyses will result in SEC estimates with a high spatial resolution and low error estimates.

Results from Round Robin participants:

The RR participants are named SEC-1, SEC-2, ..., SEC-10, and their results (Table 1 and Figure 1) show that:

- SEC-1's Envisat results resolve SEC remarkably well demonstrating the possibilities of radar altimetry for such an analysis.
- Best agreement between ICESat and Envisat repeat-track results found inland. ICESat results best resolve SEC by outlet.
- Due to scarcity of cross-over points, these cannot be used to resolve SEC by outlet.

Validation of the SEC trends were performed with airborne lidar data from NASA's IceBridge and ESA's CryoVex campaigns. They showed (Figure 2):

- Generally good repeat-track results, however best inland where slope effects are smallest.
- Best cross-over results from laser rather than radar altimetry. Believed to result from ICESat's smaller footprint size → can better resolve the actual SEC trend.
- As slope-induced errors in cross-over points can be ignored using data from ascending and descending tracks → overall lowest errors found for cross-over data.

The following inter-comparisons of the RR results were carried out in order to find the most optimal way for estimating SEC throughout GIS:

- Radar vs. laser altimetry → Result: Difference only along ice stream due to slope effects.
- Repeat-track vs. cross-over → Result: RT has best spatial resolution and 30% the lowest errors.
- Time series vs. direct estimation of dh/dt → Result: No difference.

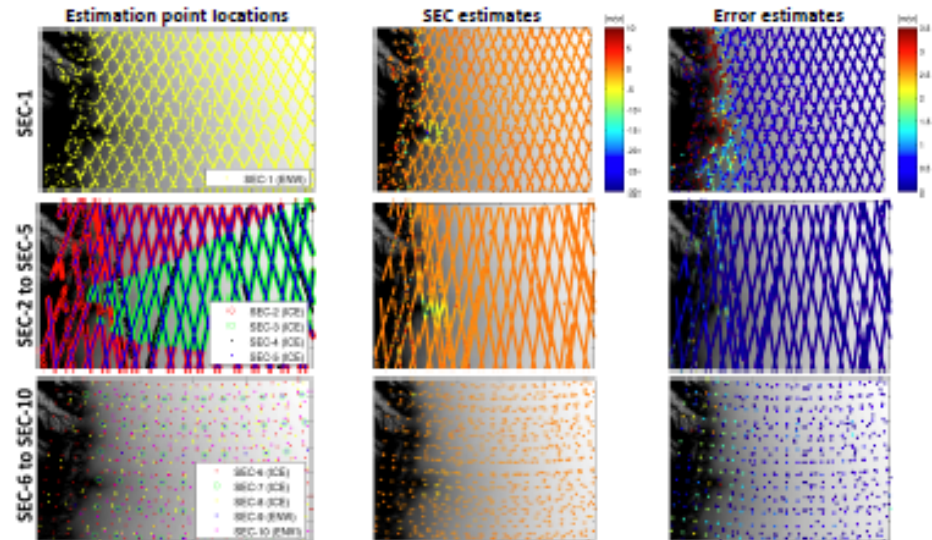


Figure 1: Results of the Round Robin analysis split up depending on the method and choice of altimeter. 'ENV' refers to the use of Envisat data and 'ICE' to ICESat. See Table 1 for details on the method. Columns: Left: Location of RR participants' estimation points, middle: dh/dt , right: Standard errors. Rows: Top + middle: Repeat-track method; Bottom: Cross-over method. The same colorbar applies for all dh/dt and error plots.

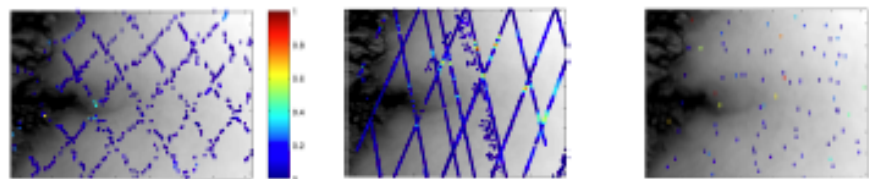


Figure 2: Validation with lidar data. L.A. scaled SEC differences between the lidar and RR dh/dt trends. The lidar trends cover the same time span as the observations, i.e. 2003 – 2009 and 2002 – 2010, respectively: SEC-1 (left), SEC-2 to SEC-5 (middle) and SEC-6 to SEC-10 (right).

Conclusions:

- Generally smaller ICESat than Envisat errors. Probably due to ICESat's smaller footprint size → more realistic resolution of actual SEC trend.
- SEC-1's radar results show large potential for the use of radar altimetry to derive SEC throughout the Greenland Ice Sheet including its margins.
- Most optimal SEC estimates can be obtained by combining repeat-track (high spatial resolution) with cross-over (low errors in cross-over points). This allows for obtaining reliable values both inland and in areas with a rough surface topography such as by the ice margin.

RR participant	Sensor	Method	Observation period	Output parameters
SEC-1	Envisat	Repeat-track	2002 – 2010	dh/dt , time series
SEC-2	ICESat	Repeat-track	2003 – 2009	dh/dt
SEC-3	ICESat	Repeat-track	2003 – 2009	dh/dt , time series
SEC-4	ICESat	Repeat-track	2003 – 2009	dh/dt
SEC-5	ICESat	Repeat-track	2003 – 2009	dh/dt
SEC-6	ICESat	Cross-overs	2003 – 2009	dh/dt
SEC-7	ICESat	Cross-overs	2003 – 2009	dh/dt , time series
SEC-8	ICESat	Cross-overs	2003 – 2009	dh/dt
SEC-9	Envisat	Cross-overs	2003 – 2009	dh/dt , time series
SEC-10	Envisat	Cross-overs	2002 – 2010	dh/dt , time series

Table 1: Information on the Round Robin participants' analyses and observation periods.



EGU Medals and Awards

- *Union medals*
 - Alfred Wegener Medal (senior late-career scientists)
- *Union awards*
 - Arne Richter Award for Outstanding Young Scientists
- Union travel awards
- *Division medals and awards*
 - Louis Agassiz Medal ('mid-term' scientist)
 - Outstanding Young Scientist Award
 - Outstanding Student Poster Award

Deadline for proposing candidates for 2015 is **15 June 2014**.

Detailed guidelines www.egu.eu/awards-medals.



The Cryosphere



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EGU 2014 issues, plans for EGU 2015

- Lecture Rooms ?
- Suggestions for improving the program ?
- PICOs ?
- Poster sessions generally 5:30-7:00 pm ?
- Please propose new sessions for 2015.
- Time of the Medal lecture: 7-8 pm ?

EGU 2015: 12 - 17 April 2015

