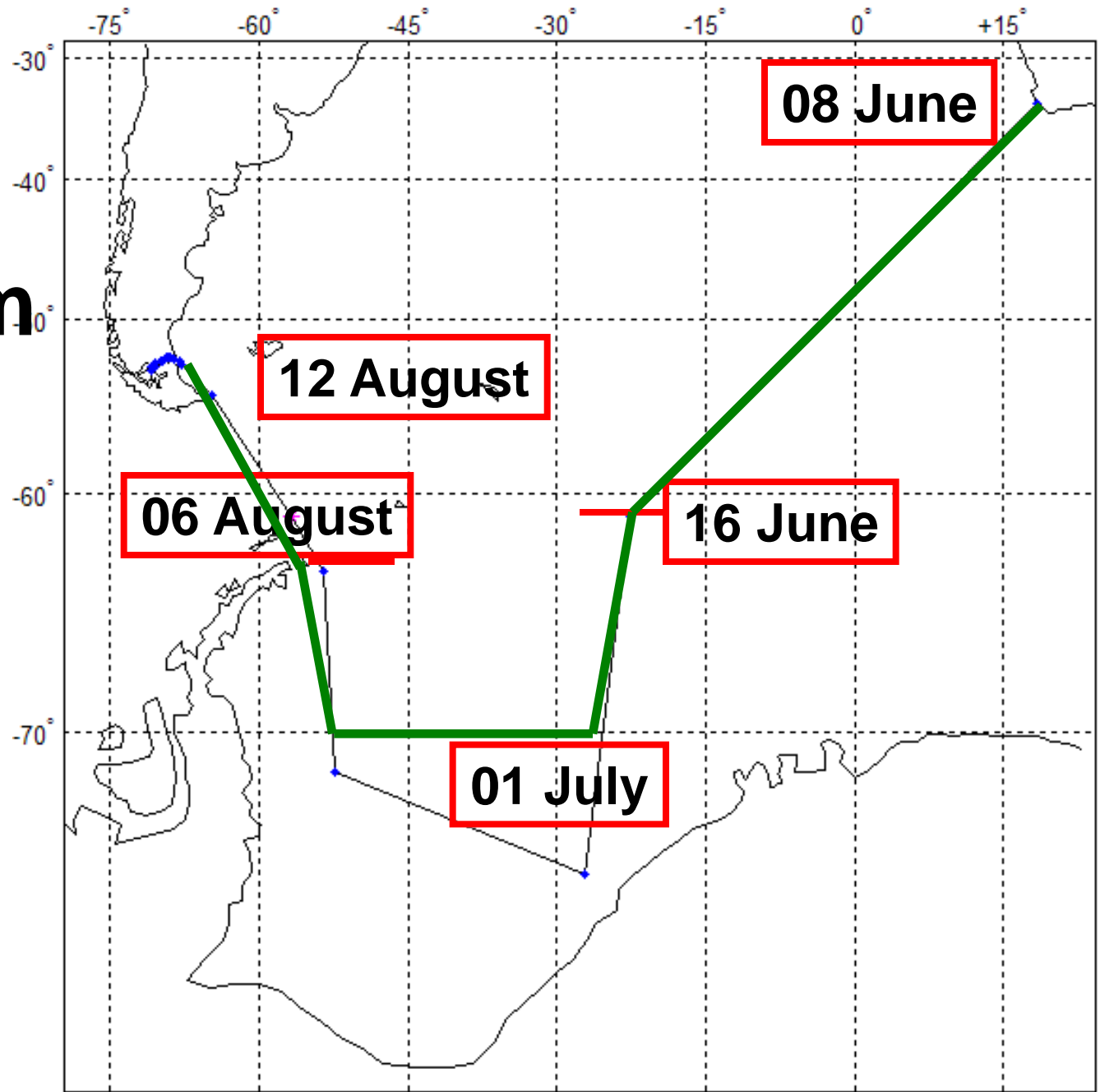


SEA ICE OBSERVATIONS IN THE SOUTHERN OCEAN

Marcel Nicolaus, Mario Hoppmann,
Sandra Schwegmann

Weddell Climate Ecosystem Study 2013

Cruise leader:
P. Lemke (AWI)



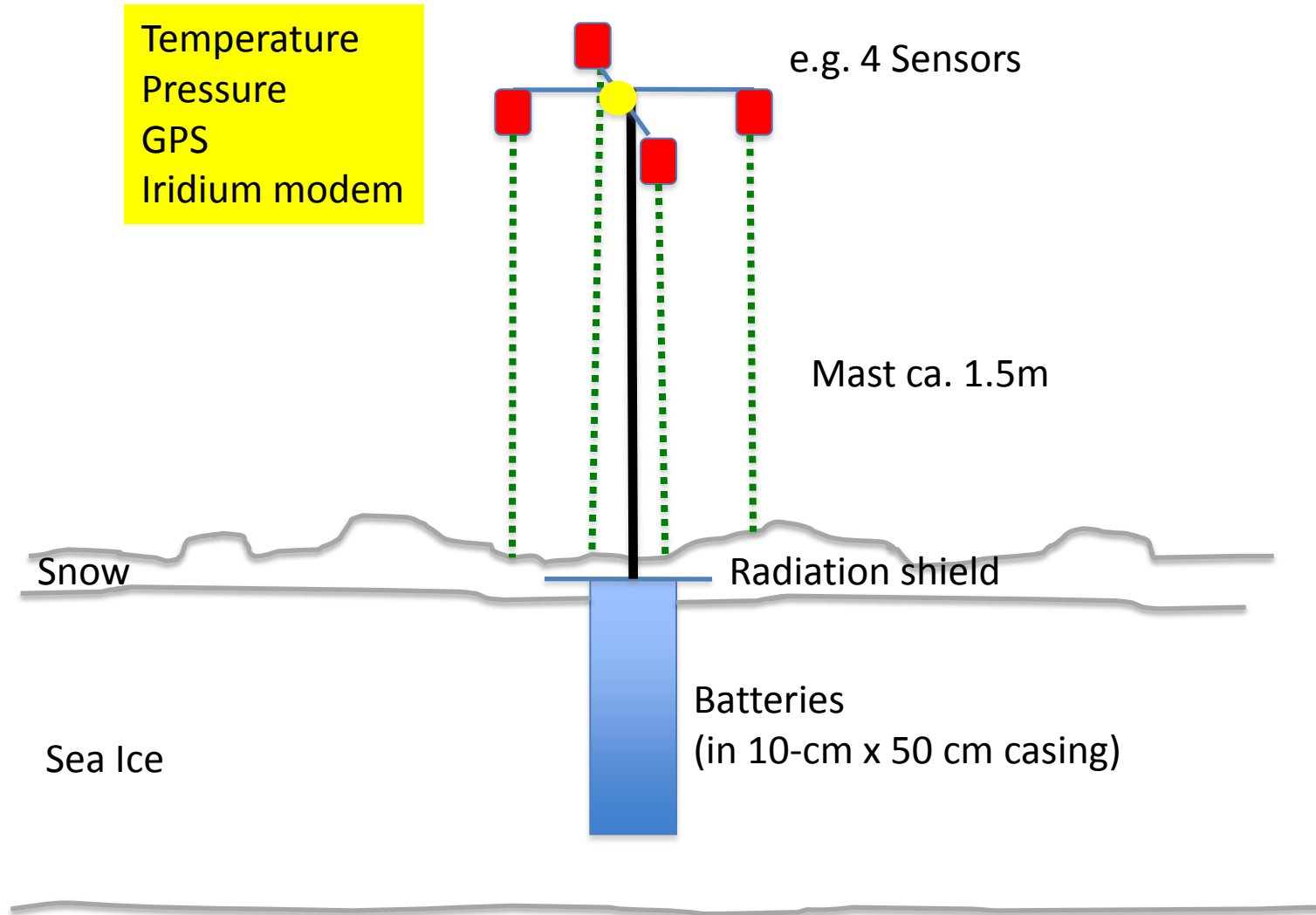
WESIS 2013 Groups

- Sea-ice physics (PI: M. Nicolaus / S. Schwegmann)
- Sea ice biogeochemistry (PI: G. Dieckmann)
- Atmosphere-sea ice chemistry (PI: H.-W. Jacobi)
- Biology (PI: S. Schiel)
- Oceanography (PI: E. Fahrbach / Optimare)
- Helicopter activities

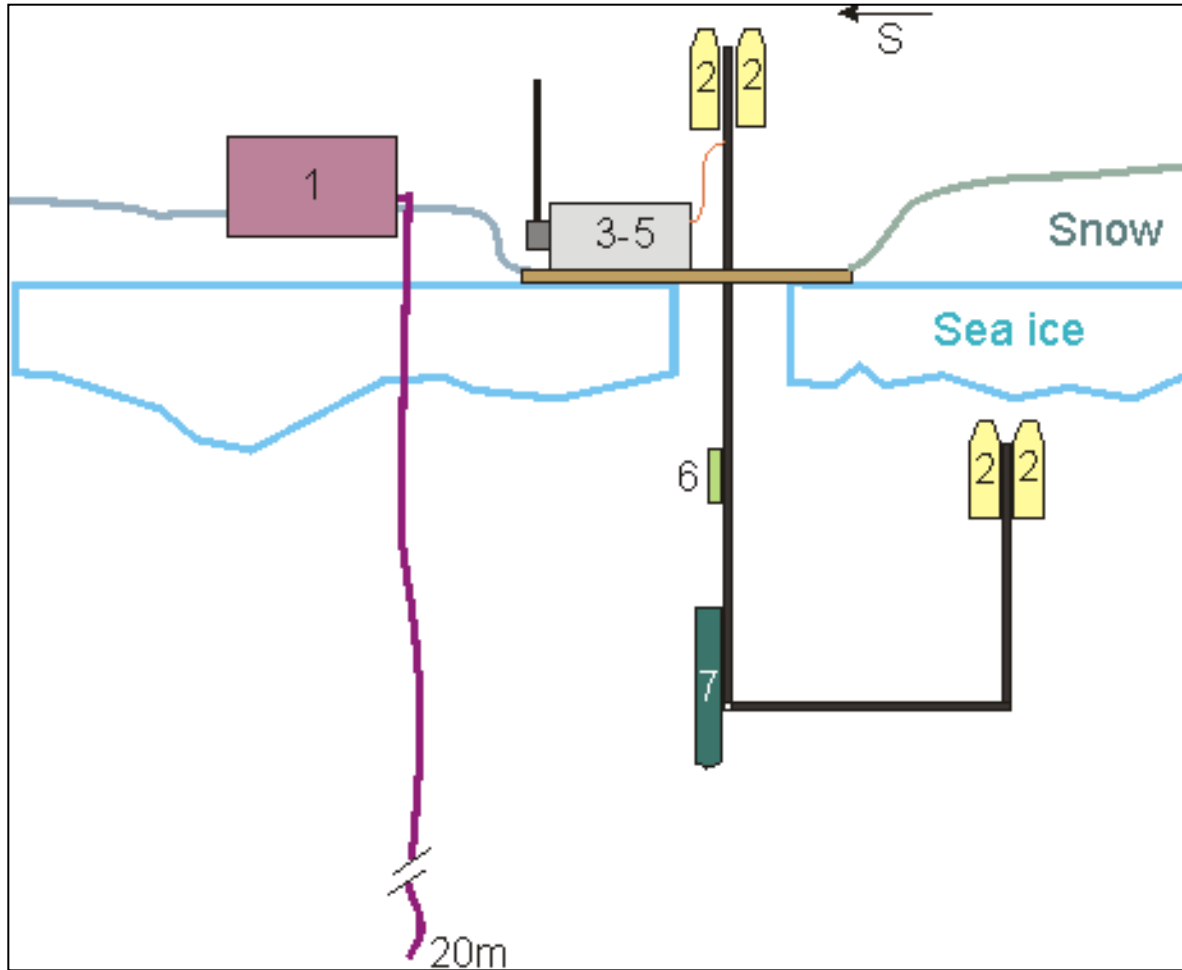
WESIS 2013 Sea-ice Physics

- Sea-ice mass balance
 - EM-bird sea-ice thickness
 - EM31 profiles of sea-ice thickness
- Snow and sea-ice physics
 - Snow depth transects
 - Snow stratigraphy
 - Ice coring (temperature, salinity, texture, + bio coop.)
- Optical properties of snow and sea ice
 - Light transmission and albedo
- Buoy program
 - Sea-ice mass balance
 - Snow depth
 - Bio-physics
- Blowing snow (K. Leonard, T. Maskym)
- Sea-ice deformation (P. Heil ?)

Development of affordable snow-depth buoys



Development of Bio-Optical Buoy (H. Flores)

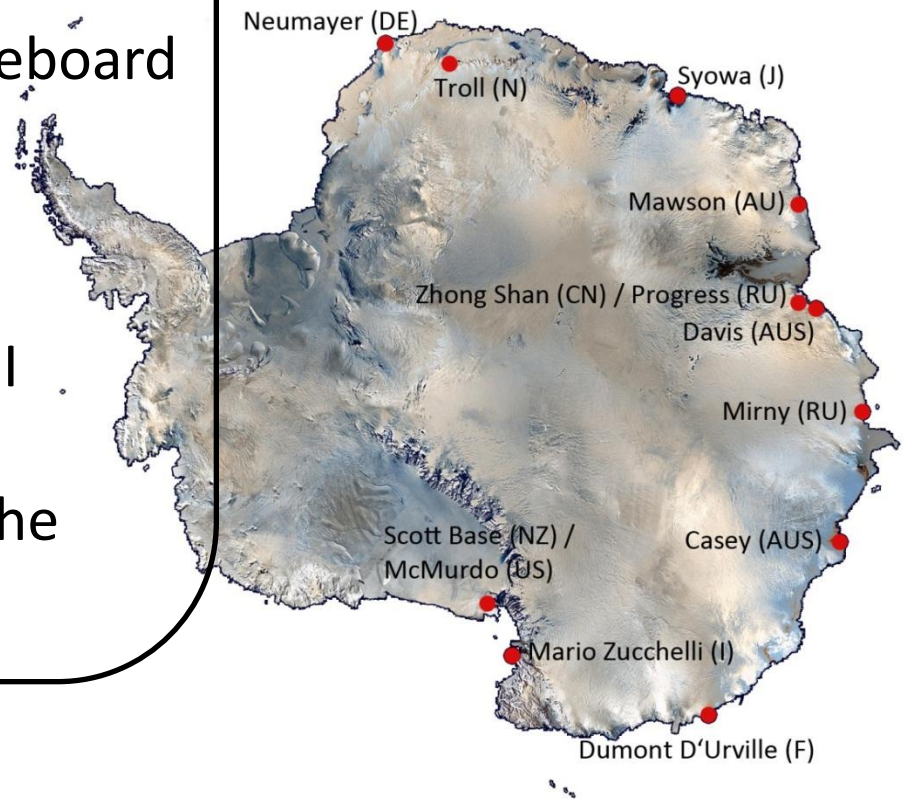


- 1 SAMS IMB
- 2 Ramses Radiometer
- 3 Data control + GPS
- 4 Power supply
- 5 Iridium modem
- 6 Fluorescence sensor
- 7 ADCP

Figure: H. Flores

ANTARCTIC FAST ICE NETWORK

- International network of fast-ice monitoring stations
- Established in 2007
- Ice and snow thicknesses, freeboard
- Meteorological and oceanic parameters
- March - December
- AWI: activities at Neumayer III started in 2010
- Data are available online (in the future...) ?

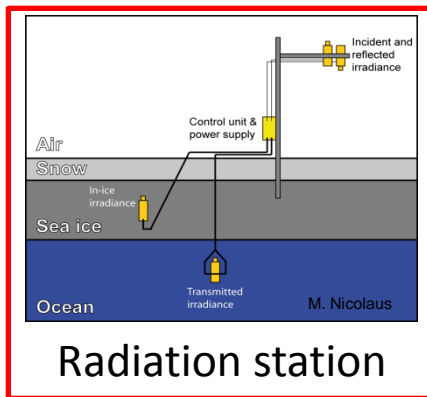
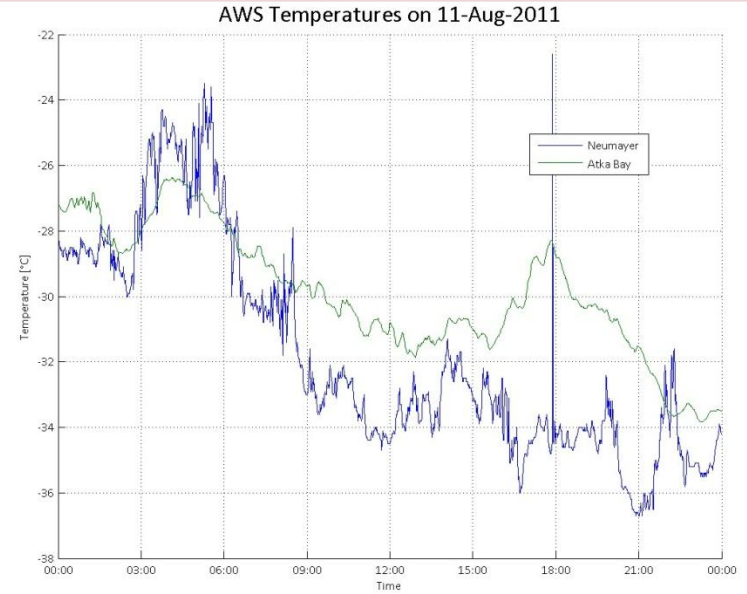
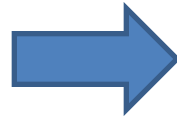


Courtesy: M. Hoppmann

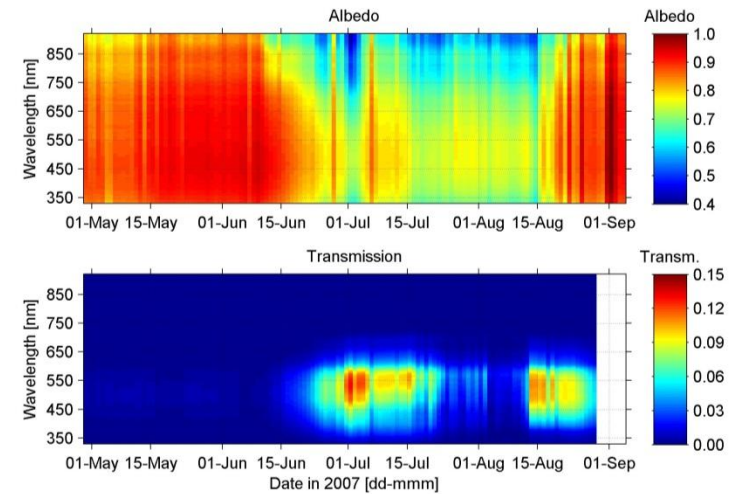
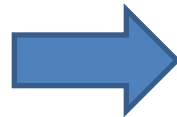
METHODS I



Weather station



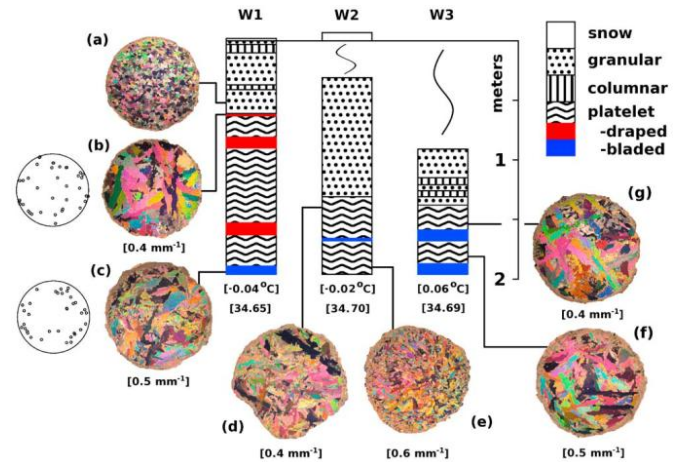
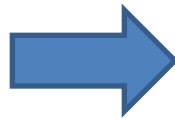
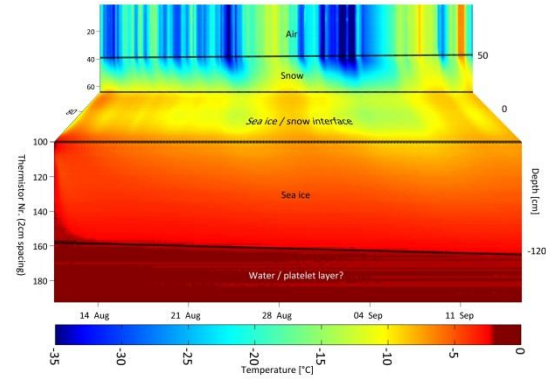
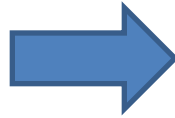
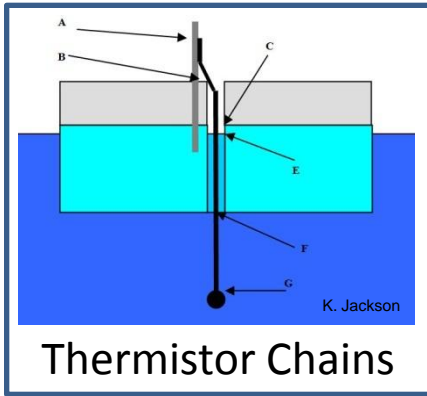
Radiation station



Already performed planned

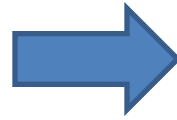
Courtesy: M. Hoppmann

METHODS II

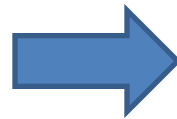
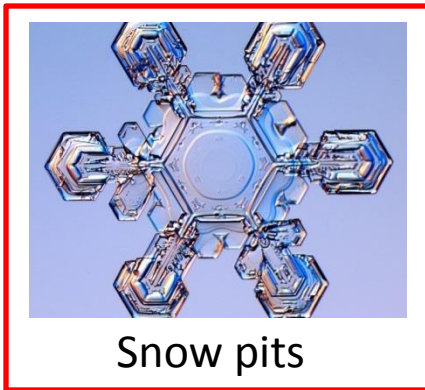


Courtesy: M. Hoppmann

METHODS III



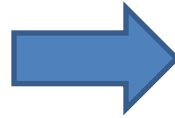
Thickness & extent of
loose ice platelet layer



Properties of snow

Courtesy: M. Hoppmann

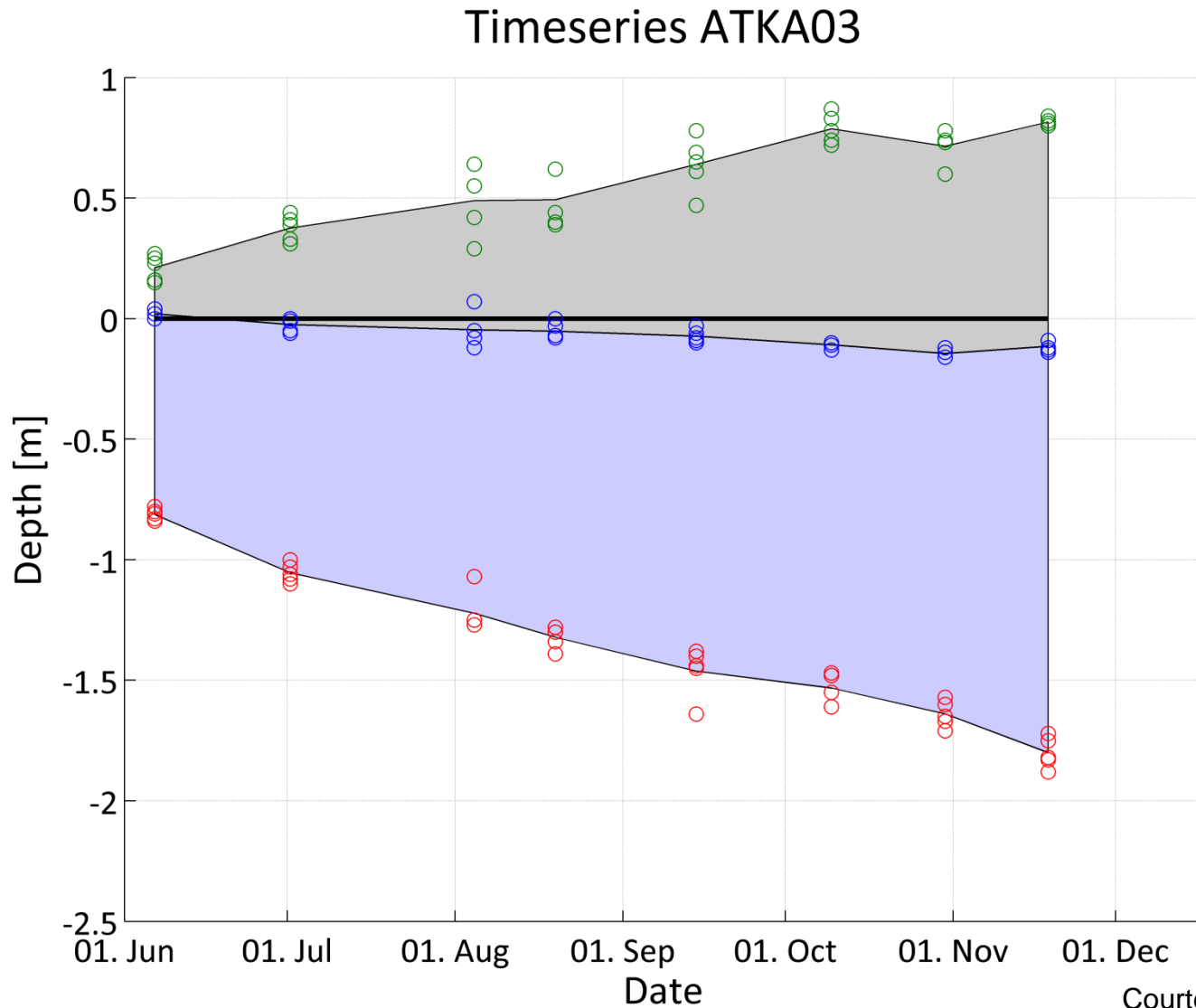
METHODS IV



Supercooled water

Courtesy: M. Hoppmann

PRELIMINARY RESULTS: DRILLINGS 2011

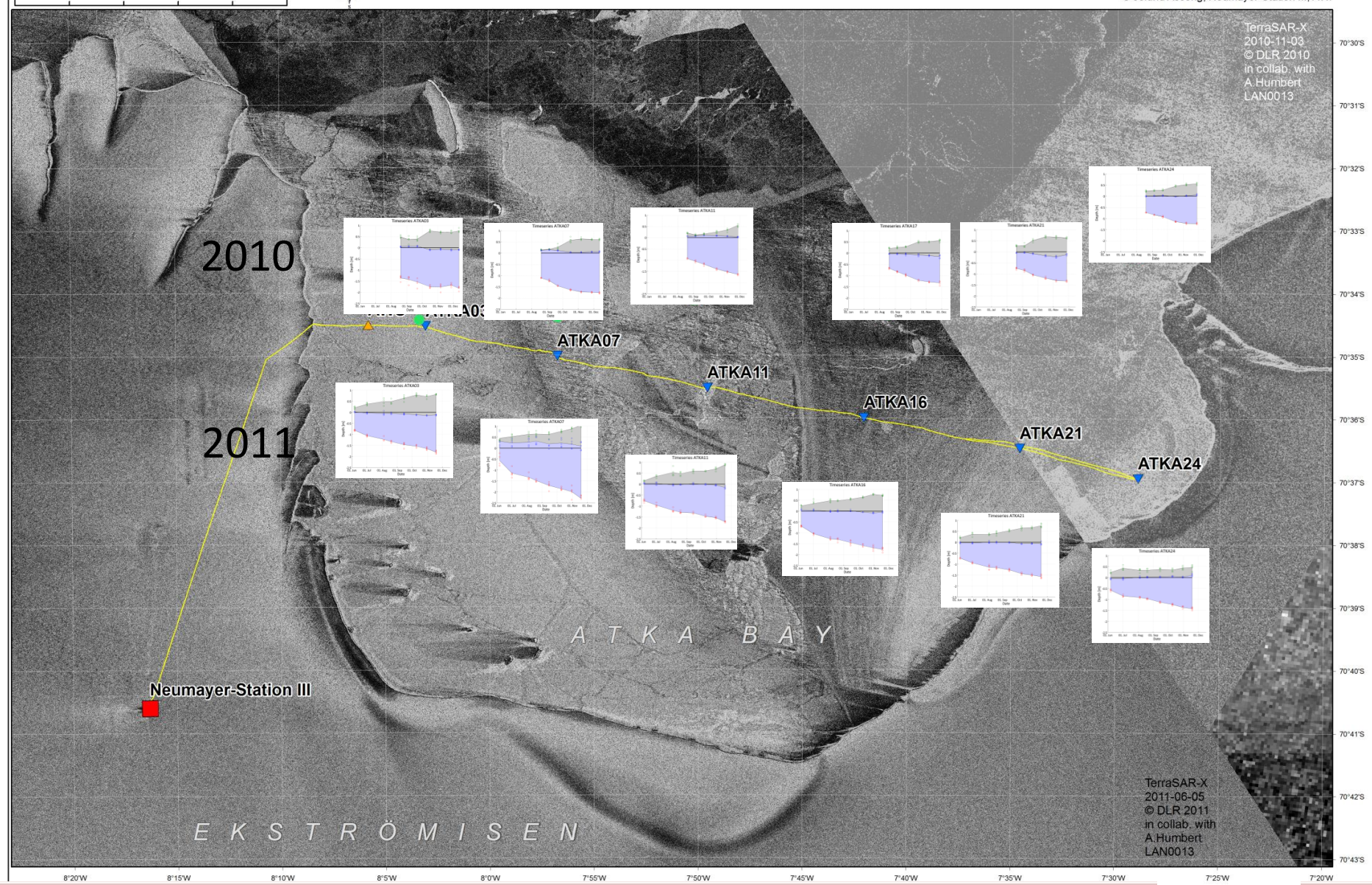


Courtesy: M. Hoppmann

PRELIMINARY RESULTS: DRILLINGS

© Jolund Asseng, Neumayer-Station III, AWI

TerraSAR-X
2010-11-03
© DLR 2010
in collab. with
A. Humbert
LAN0013



2010

2011

Neumayer-Station III

ATKA BAY

EKSTRÖMISEN

8°20'W 8°15'W 8°10'W 8°5'W 8°0'W 7°55'W 7°50'W 7°45'W 7°40'W 7°35'W 7°30'W 7°25'W 7°20'W

70°30'S
70°31'S
70°32'S
70°33'S
70°34'S
70°35'S
70°36'S
70°37'S
70°38'S
70°39'S
70°40'S
70°41'S
70°42'S
70°43'S