Arctic GEOTRACES
2015 - 2016
This project (multi-national, multi-icebreaker field effort) is of historic significance; it is unprecedented in regional scope and scientific breadth and will provide a comprehensive, pan-Arctic geochemical data set.
International Arctic GEOTRACES

GEOTRACES – international effort to conduct multidisciplinary studies of processes affecting marine biogeochemical cycling; Emphasis on key trace elements and isotopes (TEIs), and their sensitivity to changing environmental conditions.

TEs serve as nutrients, tracers, and can be contaminants,

- Extremely relevant to the Arctic, where rapid climate change and accompanying biogeochemical responses are occurring.
Very thin - to - no ice on northward leg.
First unaccompanied US surface vessel to North Pole
Overarching Scientific Goals of US Arctic GEOTRACES:

• Understand current biogeochemical processes
• Establish baselines against which future conditions can be compared
• Provide insights into the Arctic's future—provide data for models
US Arctic GEOTRACES

• US: Management proposal funded 2014, then 25 science proposals funded ~ 43 PIs.

• CLIVAR – Repeat Hydrography “piggy-back” participation ~ 35 additional stations, 5 days
  - provided enhanced spatial resolution – small Rossby radius (e.g. eddy resolution)

• Ship was “full-up”: 51 science berths + 94 crew
Somewhat different emphasis than US Program

- Modeling an important component of the Canadian effort
  Stephanie Waterman (mixing), N. Steiner (biogeochemical – production model)

- River sampling (K.A. Brown, M. Colombo) – Canadian Archipelago

- Ecosystem, primary production studies
  e.g. J. Laroche (diazotroph community in the Arctic, effect on N cycling)

Trade-off: not as many TEIs as US program.

R. Francois and J. Cullen to discuss
US and Germany at North Pole
Sept 7, 2015

Michiel Rutgers van der Loeff: “The ship is still vibrating from the wonderful experience yesterday. What a chance that we finally managed to have this meeting and exchange, such a welcome happening for all on board. And a landmark for GEOTRACES.”