IPICS MISSION

• Defining and promoting priorities for international ice core science

ORGANIZATION

• Active since 2002, Co-chairs: Ed Brook (USA, OSU) and Eric Wolff (BAS)

PRIORITY PROJECTS

• IPICS 2k - 2000 year array of ice core records
• IPICS 40K - 40,000 year array of ice core records
• Last Interglacial records
• Oldest Ice Core - goal is 1.5 Ma ice core record
• Technology - new drilling and exploration tools
• See IPICS web site for science plans and other documents

http://www.pages-igbp.org/ipics/
RECENT ACTIVITY

• IPICS Open Science Meeting, Giens, France, October 2012
• IPICS Oldest Ice Workshop, La Londe Les Maures, France. October 2012
• IPICS Special Issue CPD/TCD 2013
• Ice Coring
  - NEEM Project (*Nature* 493 January 24 2013)
    - New cores covering the last 40 ka, finished or in progress
      - Greenland: NEEM
      - Antarctica: Talos Dome, James Ross Island, Larissa (Bruce Plateau), WAIS Divide, Fletcher Promontory, Roosevelt Island
• New cores planned: Renland (Greenland), NEGIS, South Pole
• Synthesis efforts on 40 k climate (Pedro et al., 2011; Parrenin et al., 2012)
• Ice core contributions to PAGES 2k synthesis (PAGES 2k Consortium, 2013)
FUTURE IPICS Activities

- 2nd IPICS Open Science Meeting, 2016 (Date and Location TBA)
- New initiative on ice core records of last interglacial
  - Targets in West Antarctica, East Antarctica, Greenland
- New initiative on non-polar ice cores in IPICS 2k
- New initiative on drilling to study ice fabrics, structures, and deformation
Oldest ICE: IPICS Grand Challenge
An ice core reaching the 40 ka world would

- Test causes of 40 ka cycle that suggest southern and northern climate cancel in marine records
- Test causes of 40-100 ka change that call on CO$_2$ changes
- Test whether climate and CO$_2$ remain in step in a 40 ka world
- New examples to test the relationships between different parts of Earth system
- Test whether millennial scale variability persists under different conditions
  - Further test hypotheses about triggers for deglaciation
The challenge

• to obtain a reliable ice core record of climate and biogeochemistry extending through several of the 40,000 year cycles and up to the present, requiring

• a replicated Antarctic ice core record extending at least 1.3 million and preferably 1.5 million years, into the past

• Note that we aim for two sites!
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Where to Drill?

• We don’t know yet
• The right sites are probably limited, but have low heat flow and not too thick
• We need:
  – Geophysical surveys
    • Airborne geophysics
    • Heat flow information
  – Access drilling
    • US RAID Drill
    • Other access technologies
    • Multiple deep cores
• We envision
  – An international effort to recover and analyze multiple cores