

International Polar Year

IPY 2007/2008

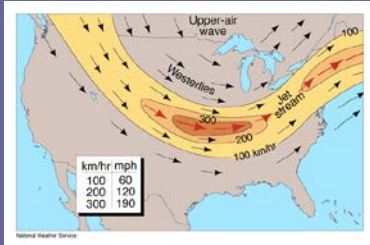
ICSU IPY Planning Group

Robin E. Bell Vice-Chair ICSU IPY-PG

Chris Rapley Chair ICSU IPY-PG

IPY Legacy

- First Polar Year – 1882/3
- Second Polar Year – 1932/3
- International Geophysical Year – 1957/8
 - *Fostered International Cooperation during the Cold War*
 - *Raised Polar Science to a New Level*
 - *Antarctic Treaty signed*

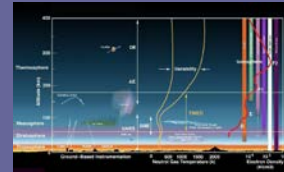


Jet stream

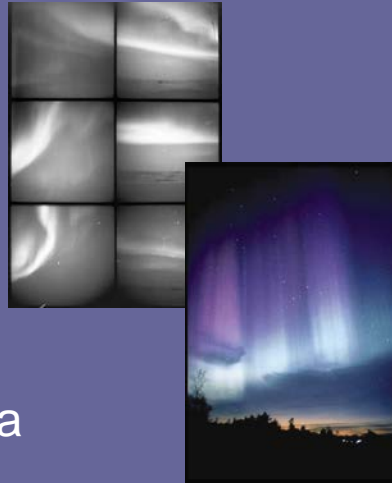
Global standardization of techniques



Ionosphere



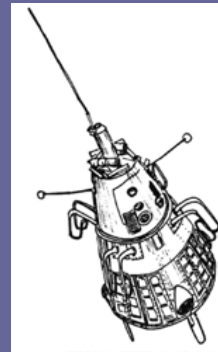
Ozone layer



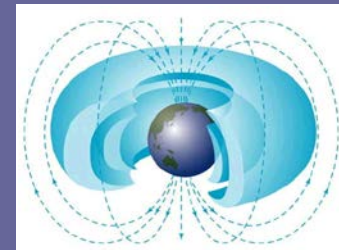
Aurora phenomena

3-D studies of atmosphere

Van Allen (radiation) belts



EXPLORER 1



Thickness of Antarctic ice sheet



Seismic & gravimetric transects of Antarctica



SPUTNIK

Successful satellites for exploration and remote sensing

Advocates of a IPY-2007/8

- Numerous individuals, institutes, agencies, nations
- U.S. Polar Research Board
 - *Brainstorming Workshop Nov. 2002*
- European Polar Board & SCAR
 - *Appointed Coordinator - Feb. 2003*
- International Council of Science (ICSU)
 - *Approved concept of Planning Group - Feb 2003*
- Arctic Science Summit Week – Arctic Ocean Science Board & International Arctic Science Council endorsements
- World Meteorologic Organization
- Antarctic Treaty (ATCM)

ICSU IPY Planning Group

WHEN

- Established June 2003
- First meeting July 31-August 2, 2003
- Letters to Scientific Unions, Special Committees (IGBP, WCRP, etc) and ICSU Bodies September 8, 2003
- Second meeting December 2003

ICSU IPY Planning Group - WHAT

- Stimulate, encourage and organize debate on IPY;
- Formulate set of IPY objectives;
- Develop high-level IPY Science Plan;
 - *Promotes international cooperation*
 - *Research activities not possible within national programs*
 - *Balances Arctic and Antarctic sciences, including social science*
 - *Engages young scientists*
 - *Educates the public*

ICSU IPY Planning Group -WHO

- Membership
 - *Chris Rapley (UK, Chair)*
 - *Robin Bell (USA, Vice-Chair)*
 - *Ian Allison (Australia)*
 - *Robert Bindschadler (USA)*
 - *Steve Chown (South Africa)*
 - *Gerard Duhaime (Canada)*
 - *Vladimir Kotlyakov (Russia)*
 - *Olav Orheim (Norway)*
 - *Zhanghai Zhan (China)*
 - *Michael Kuhn (IUGG)*
 - *Henk Schalke (IUGS)*
 - *Prem Pandi (India)*
 - *Hanne Petersen (Denmark)*
 - *Gino Casassa (Chile)*
- Support
 - *Chris Elfring (US PRB)*
 - *Thomas Rosswall & Daniel Rodary (ICSU)*

Emerging IPY Vision

- An international program of coordinated research to explore the polar regions, deepen understanding of polar interactions including their role in global climate, expand our ability to detect changes, and extend this knowledge to the public and decision makers.

WHY an IPY-2007/8?

- Why Polar?
- Why International?
- Why Now (2007/8)?

Why Polar?

- Polar regions are a Key Part of the Global System
 - *Drive changes globally*
 - *Changes in the Poles are occurring rapidly and possibly accelerating*
 - *Global changes are amplified at the poles*
 - *Poles hold a unique repository of Global Change Information*

Why International?

- Challenging Polar Environment Fosters International Collaboration
 - *International Collaboration Enhances Research and Knowledge*
 - *Partnered research drives Innovation and Financial Efficiency*
 - *Science Collaboration builds International Harmony*

Why 2007/8?

- 50th anniversary of the IGY
- A Focused Effort will produce Accelerated Understanding of our Planet
 - *Intensive, Multidisciplinary Program ensures Holistic Insights into Planetary Processes*
 - *Recent Technology and Logistic Advances provide opportunity to implement New Modes of Planetary Study*
 - *Collaborative Effort will lay the Foundation for Future Generations and will produce a Major Benchmark*

IPY Characteristics

- Address compelling science issues
- Research activities that would not otherwise occur
- Internationally coordinated polar observations and analysis
- Attract and develop next generation of polar scientists
- Engage the public
- Plus
 - *Multidisciplinary*
 - *Bipolar*
 - *Innovative technology*
 - *Societal relevance*

IPY Major Themes

- Exploration of New Frontiers
- Understanding Change at the Poles
- Decoding Polar Processes

Exploration of New Frontiers

- Examples:
 - *Gamburtsev Mountains and East Antarctica*
 - *Sub-ice Habitats and Environments (Lakes)*
 - *Polar Biodiversity and Ecosystems*
 - *Dynamic Changes in the Earth's Interior*
 - *Explore the Polar Night*

Understanding Change at the Poles

- Examples:
 - *Integrated Polar Observing Networks*
 - *Stability of the Cryosphere*
 - *Changes in Polar Society: Drivers, History, Stresses and Opportunities*
 - *New Polar Benchmarks and Retrospectives*
 - *Environmental and Societal Change*

Decoding Polar Processes

- Examples:
 - *Role of the Poles in the Global Climate System*
 - *Sun-Earth Connections*
 - *Pollution and Health: Transport, Accumulation and Impacts*
 - *Polar Genomics and Ecosystem Function*

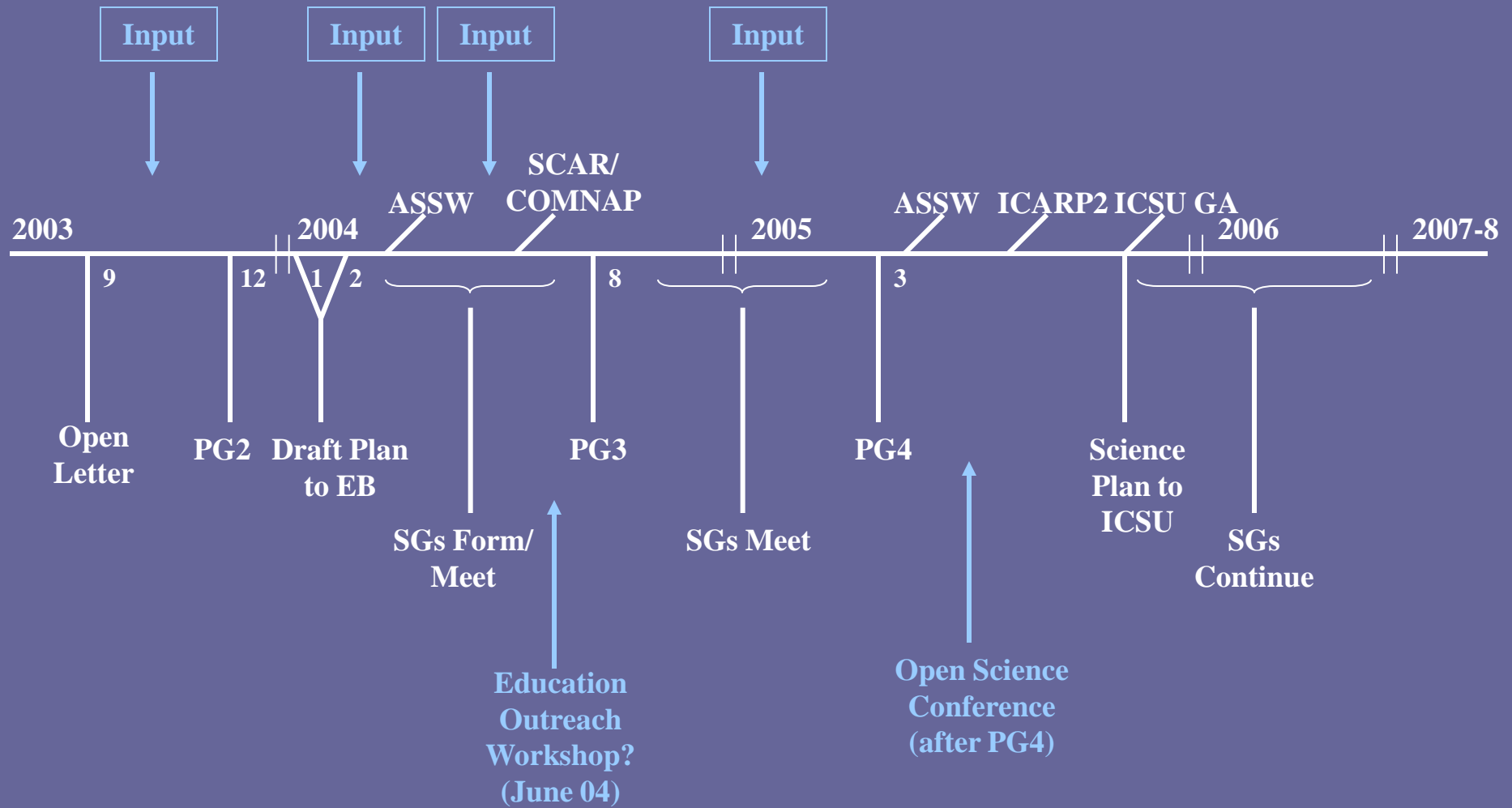
Enabling technologies

- New satellite instruments
- “Fastdrill” / “Shaldrill”?
- Autonomous Platforms, Underwater Vehicles, Airborne Vehicles, Rovers?
- New Genomic / Proteomic / Bioinformatics technologies

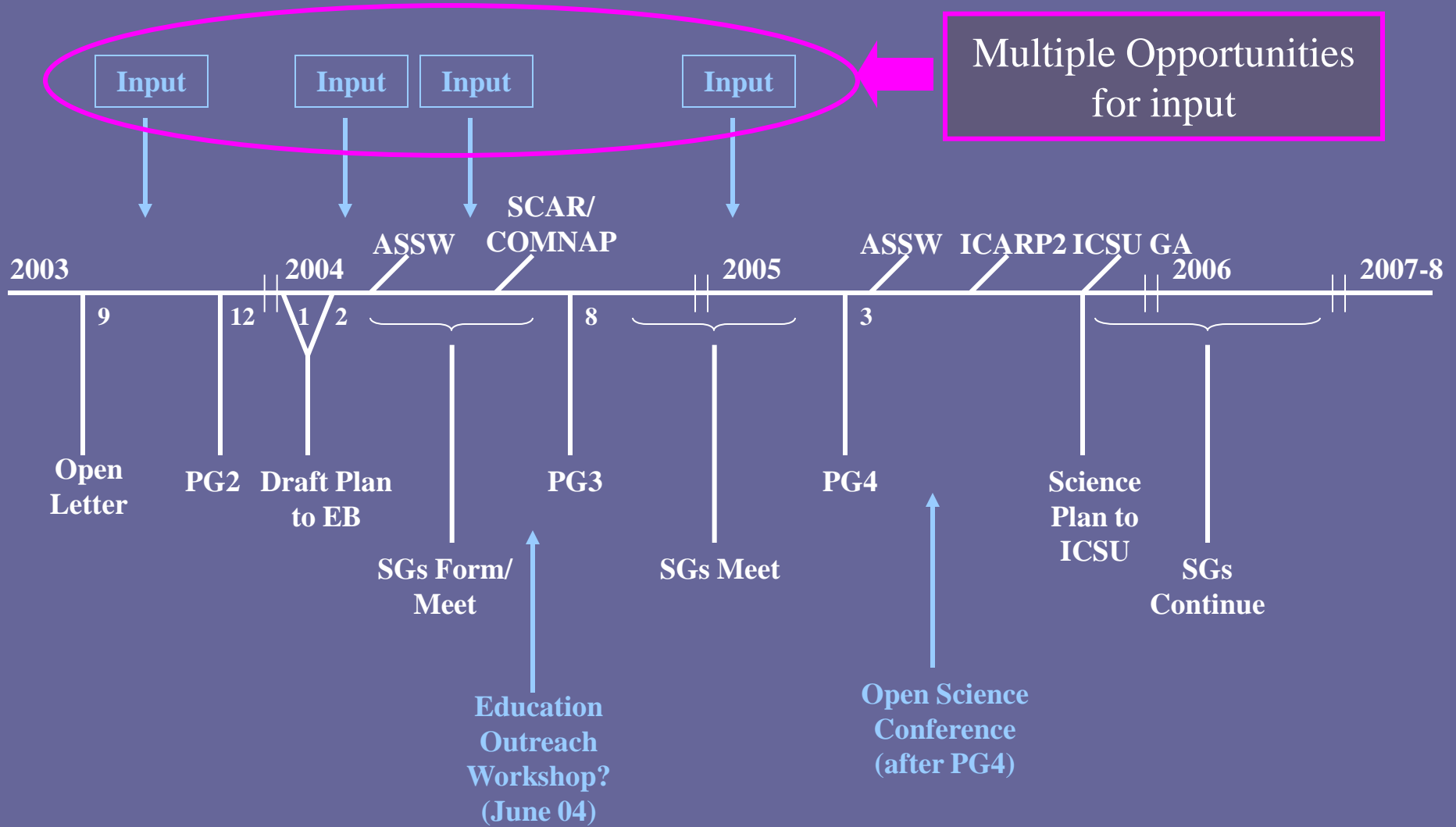
Education & Outreach ideas

- Leading broadcaster / communicator on each National Committee
- Communication sub group
- Teachers / schoolchildren / general public competition to participate
- Schoolchildren role in analysis?

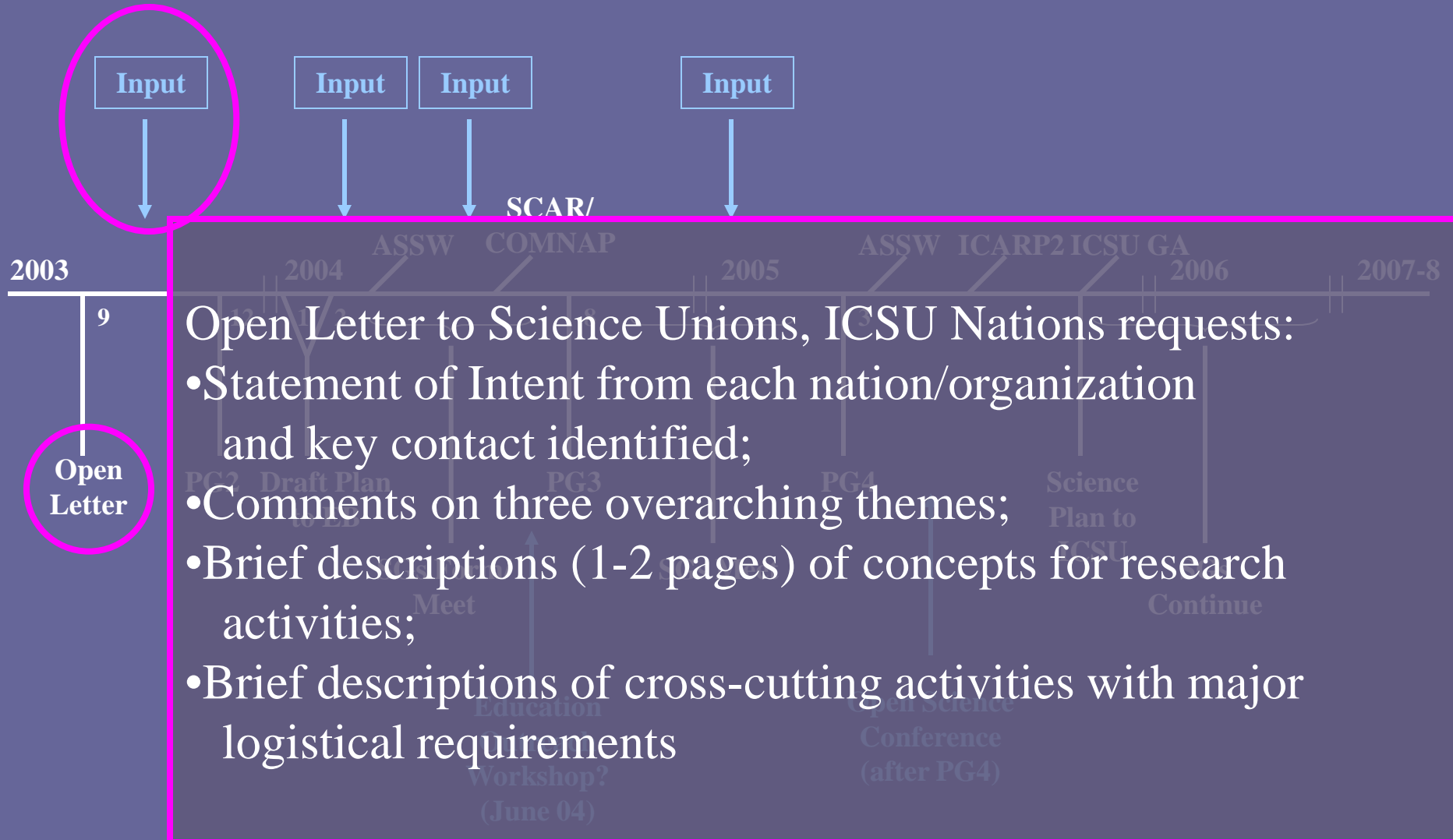
Timeline



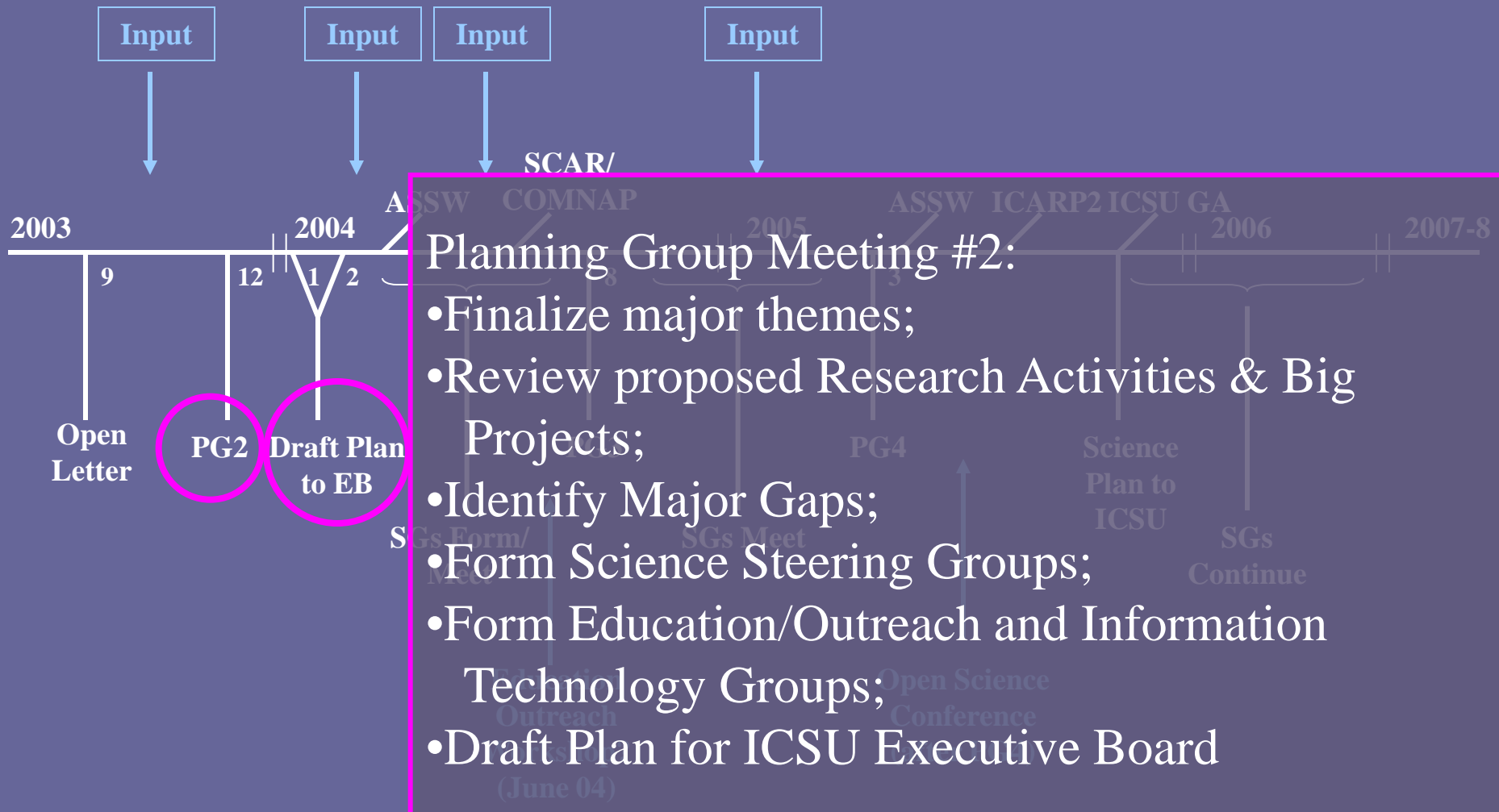
Timeline



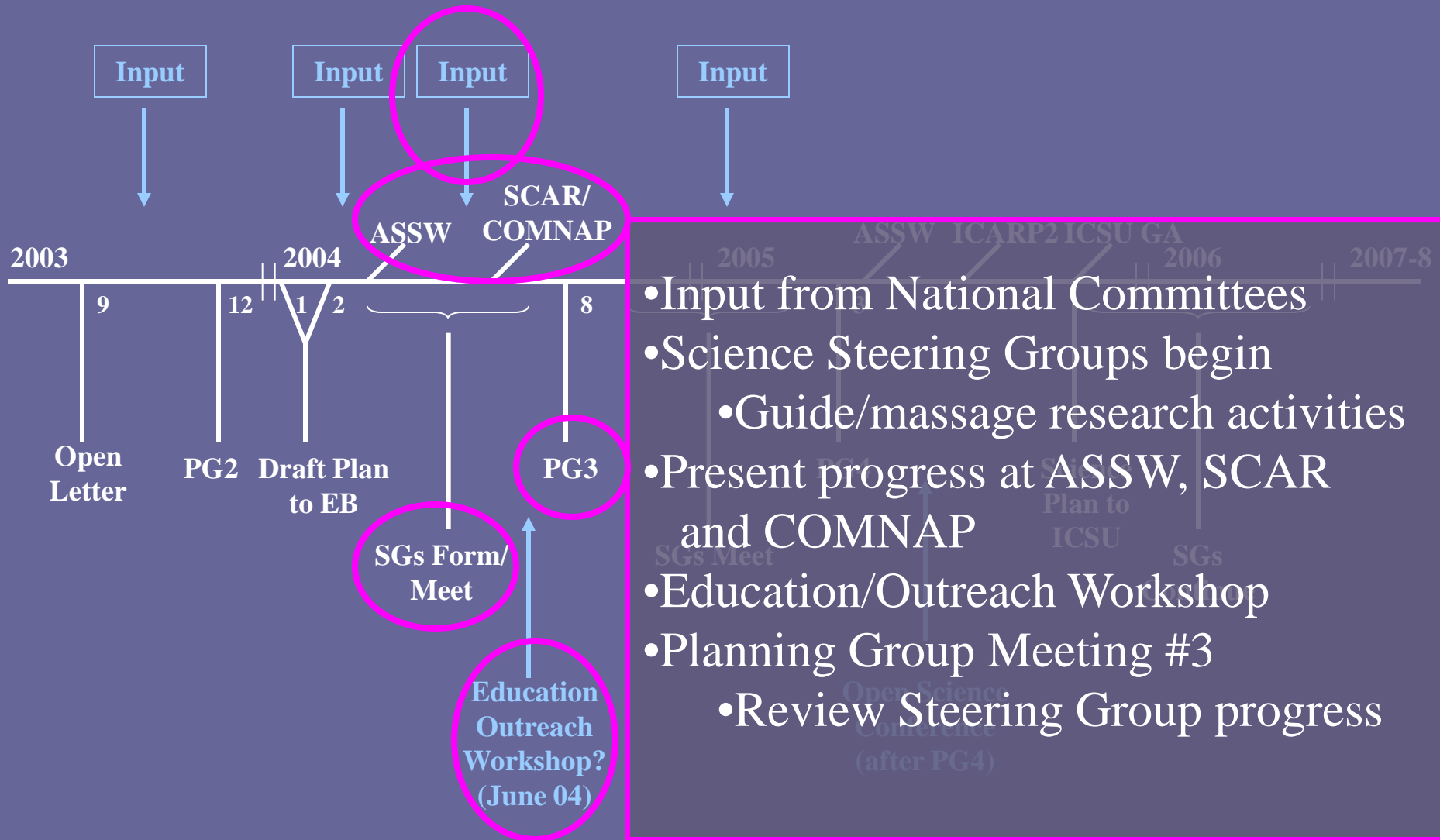
Timeline (Sept.-Nov. 2003)



Timeline (Dec. 2003-Feb. 2004)

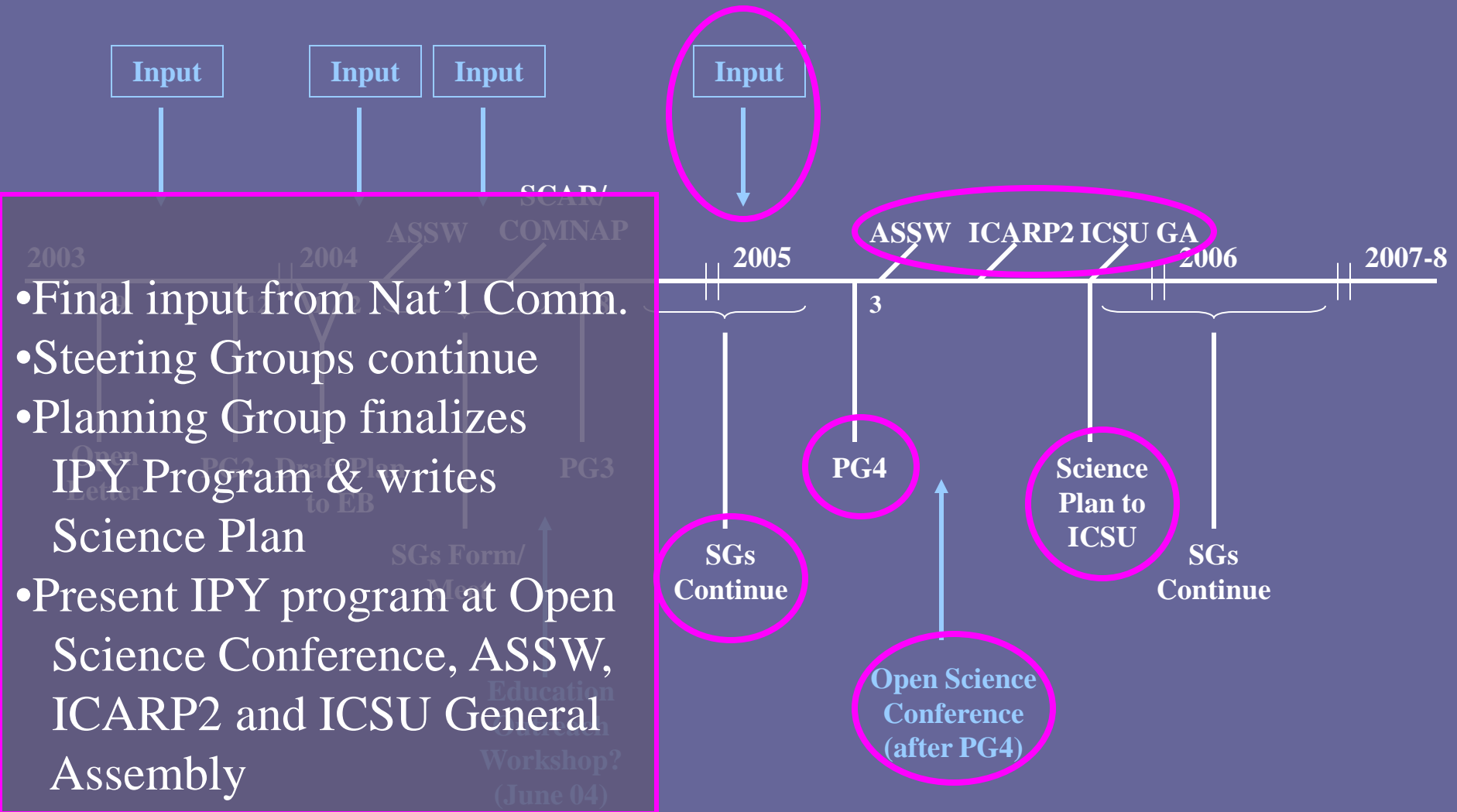


Timeline (Mar.-Sept. 2004)



- Input from National Committees
- Science Steering Groups begin
 - Guide/massage research activities
- Present progress at ASSW, SCAR and COMNAP
- Education/Outreach Workshop
- Planning Group Meeting #3
 - Review Steering Group progress

Timeline (Sept.2004-Sept.2005)



What Should the Antarctic Earth Science Community Do?

- Nationally
 - *Provide Feedback on Major Themes*
 - *Develop National Planning Group/Contact*
 - *Build Support within Science Community and Funding Agencies*
 - *Submit Ideas 1 page to Planning Group Soon Especially for BIG Ideas*

What Should the Antarctic Earth Science Community Do?

- Internationally
 - *Brainstorm over Beer in Potsdam*
 - *Use ISAES as Opportunity to Develop Ideas*
 - *Submit 1 page ideas to Planning Group - SOON*

ICSU Planning Group Asking For:

- Statement of Intent from each nation/organization and key contact identified;
- Comments on three overarching themes;
- Brief descriptions (1-2 pages) of concepts for research activities;
- Brief descriptions of cross-cutting activities with major logistical requirements

Special Sessions at Fall AGU &
Town Meeting – 8th-12th
December

Submit Ideas by Early December

IPY Planning Meeting Group –
17th-19th December