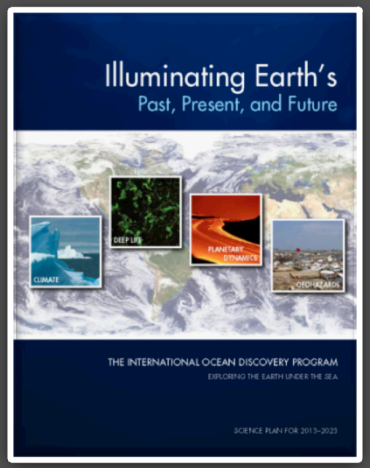
International Ocean Discovery Program

International Ocean Discovery Program: Current Structure, Proposals in the System, Future Directions for MSROC planning purposes

Sean Gulick, Co-Chair
Science Evaluation Panel



Science Community

Support Office and Site Survey Data Bank

Science Evaluation Panel (SEP)

Environmental Protection and Safety Panel (EPSP)

JR partners
ECORD
Australia
Brazil
China
India
Korea

CPP

INDUSTRY

JR Facility Board

NSF

ECORD Facility Board

ECORD

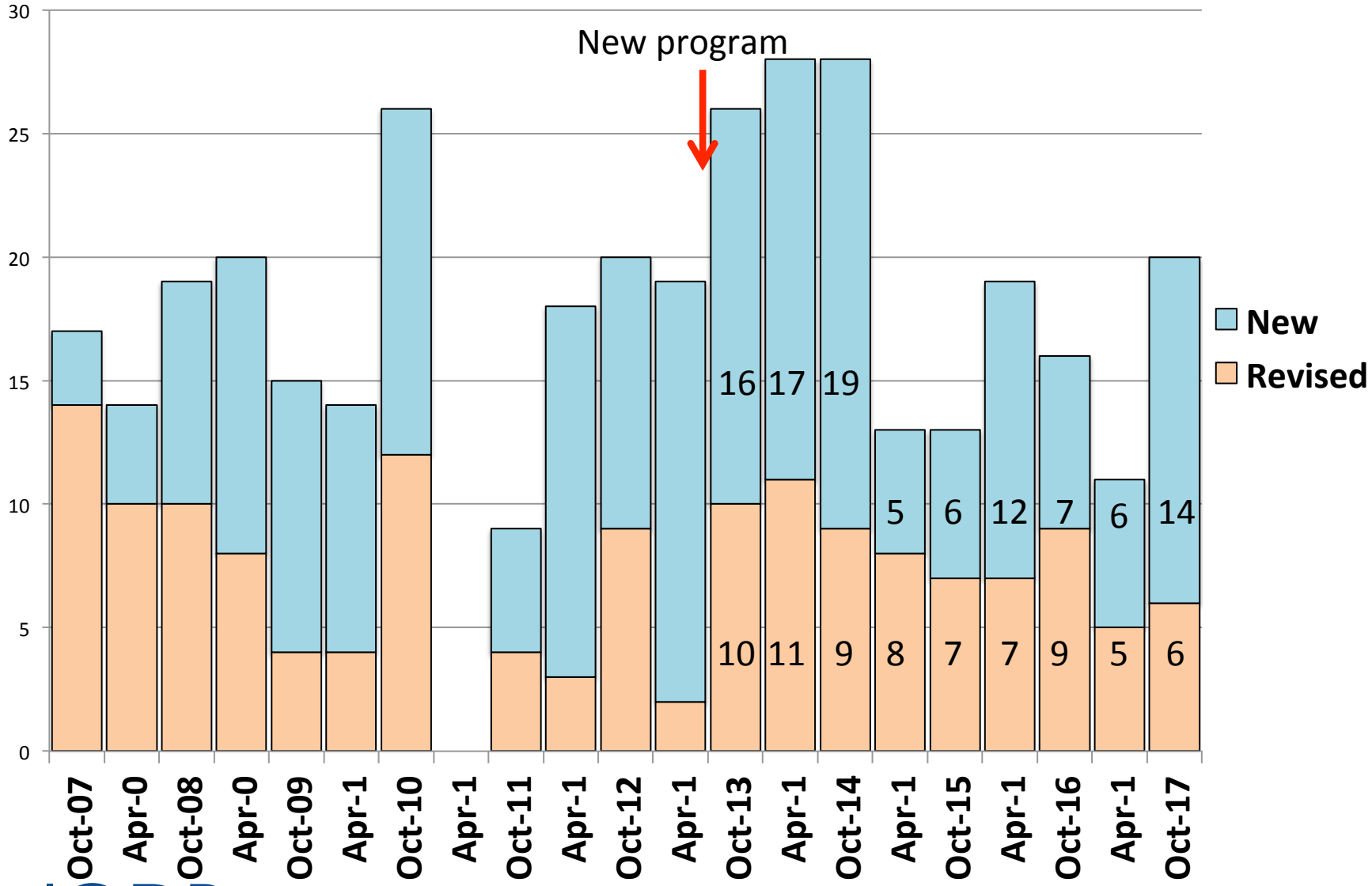
***Chikyu* IODP Board**

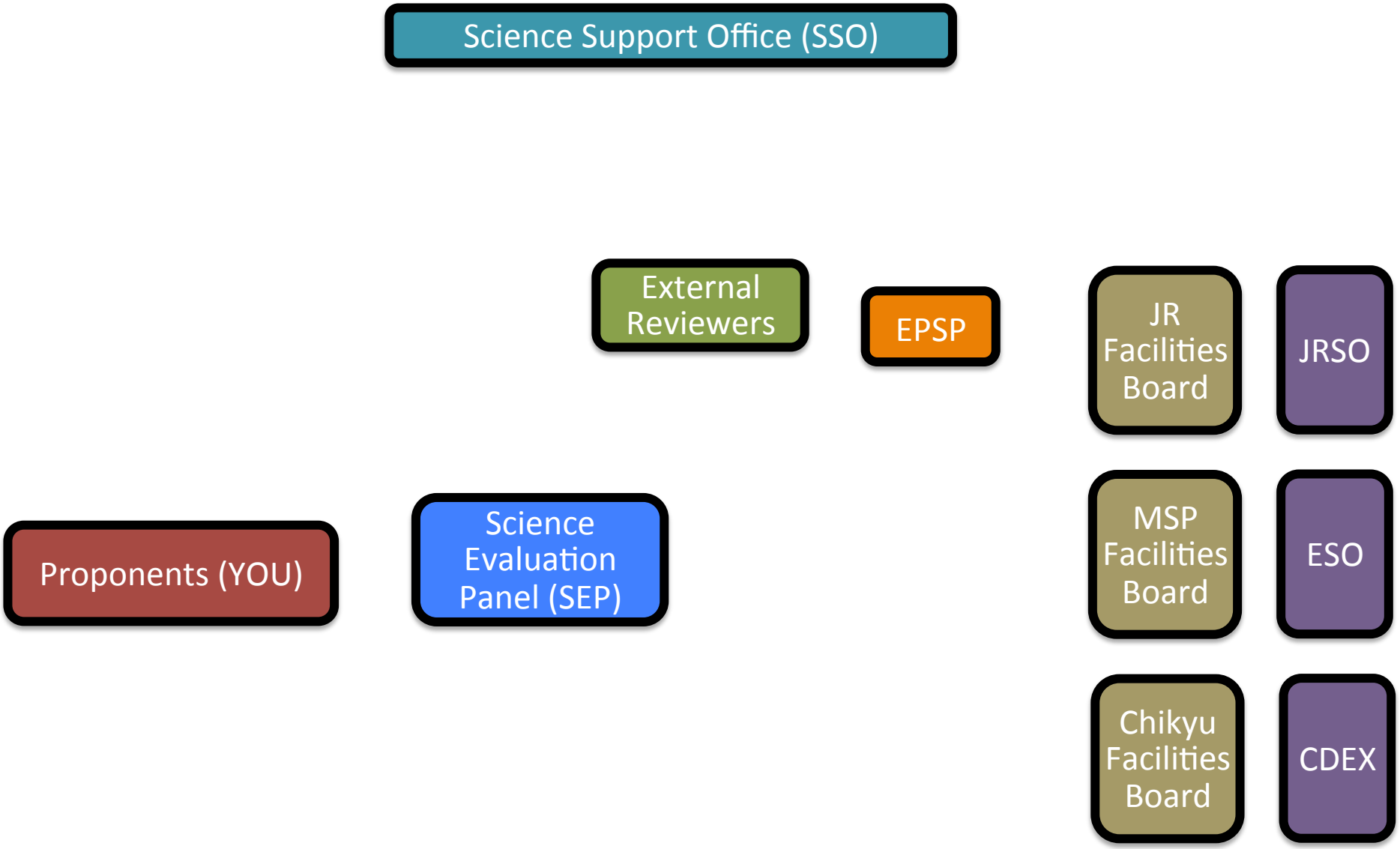
MEXT

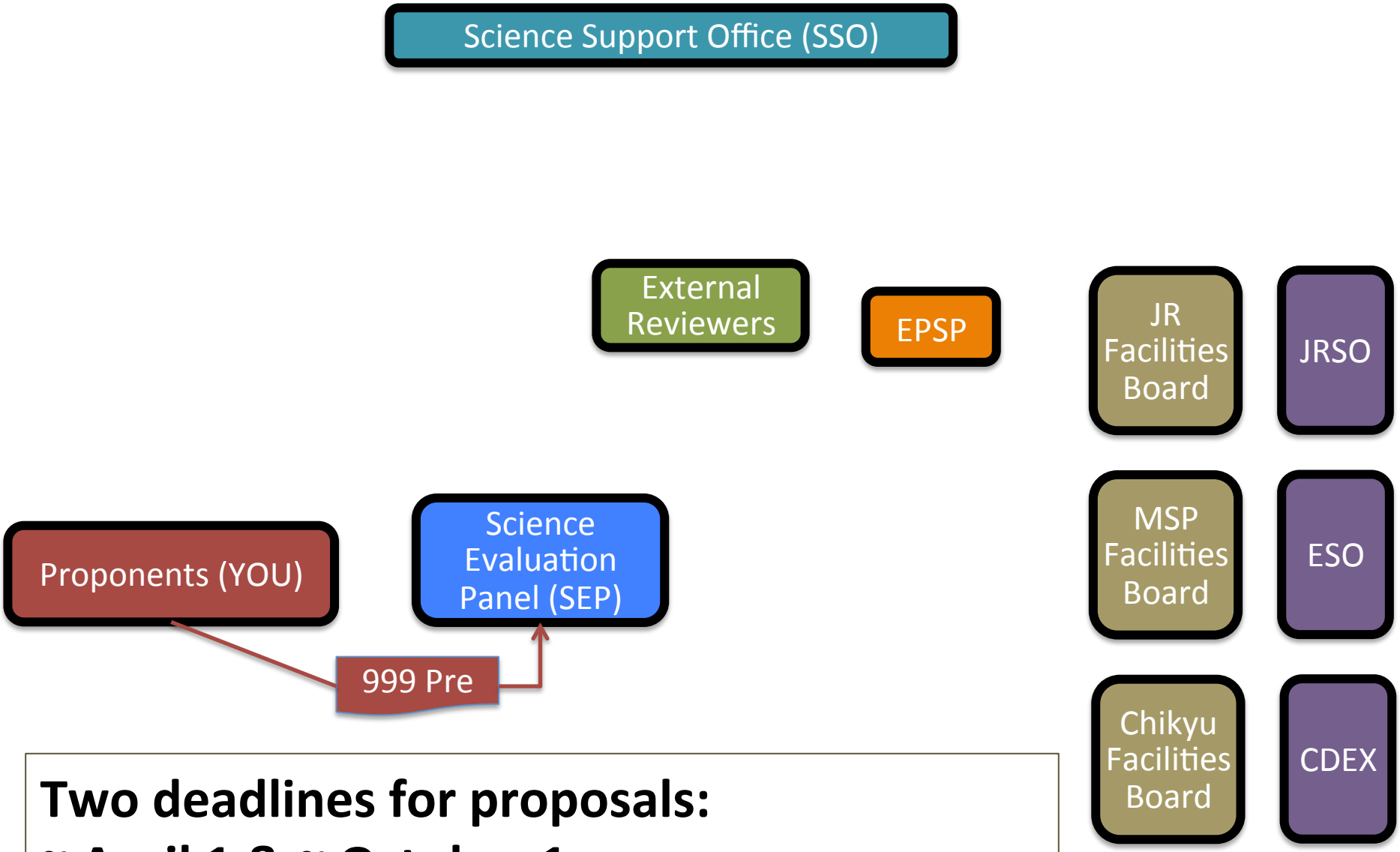
Chikyu partners
ECORD

F O R U M

Proposal Submission History




Science Support Office (SSO)
External Reviewers
EPSP
JR Facilities Board
JRSO
Proponents (YOU)
Science Evaluation Panel (SEP)
MSP Facilities Board
ESO
Chikyu Facilities Board
CDEX



Two deadlines for proposals:
~ April 1 & ~ October 1
Submit site survey data within 1 month
Proposal assigned a number (e.g., 999-Pre)

International Ocean Discovery Program

SEP Review Procedures:

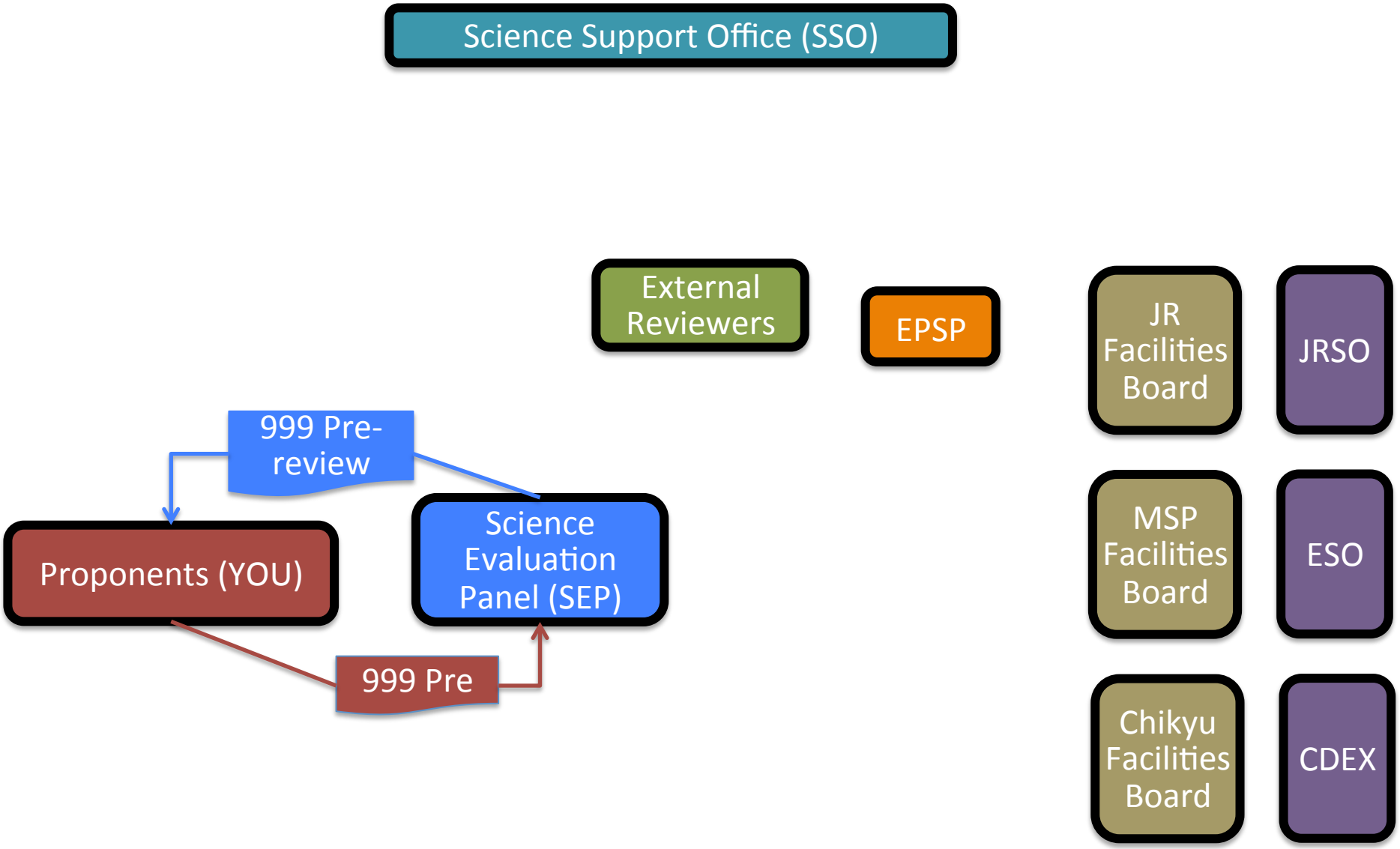
(general evaluation criteria for IODP proposals)

- Are the scientific questions/hypotheses being addressed exciting and of sufficiently wide interest to justify the requested resources?
  - *SEP deactivates the pre-proposal or full proposal if there isn't a strong science question/hypothesis.*
  - *SEP aims to give a clear signal to the proponents to rethink their science question/hypothesis, if needed.*

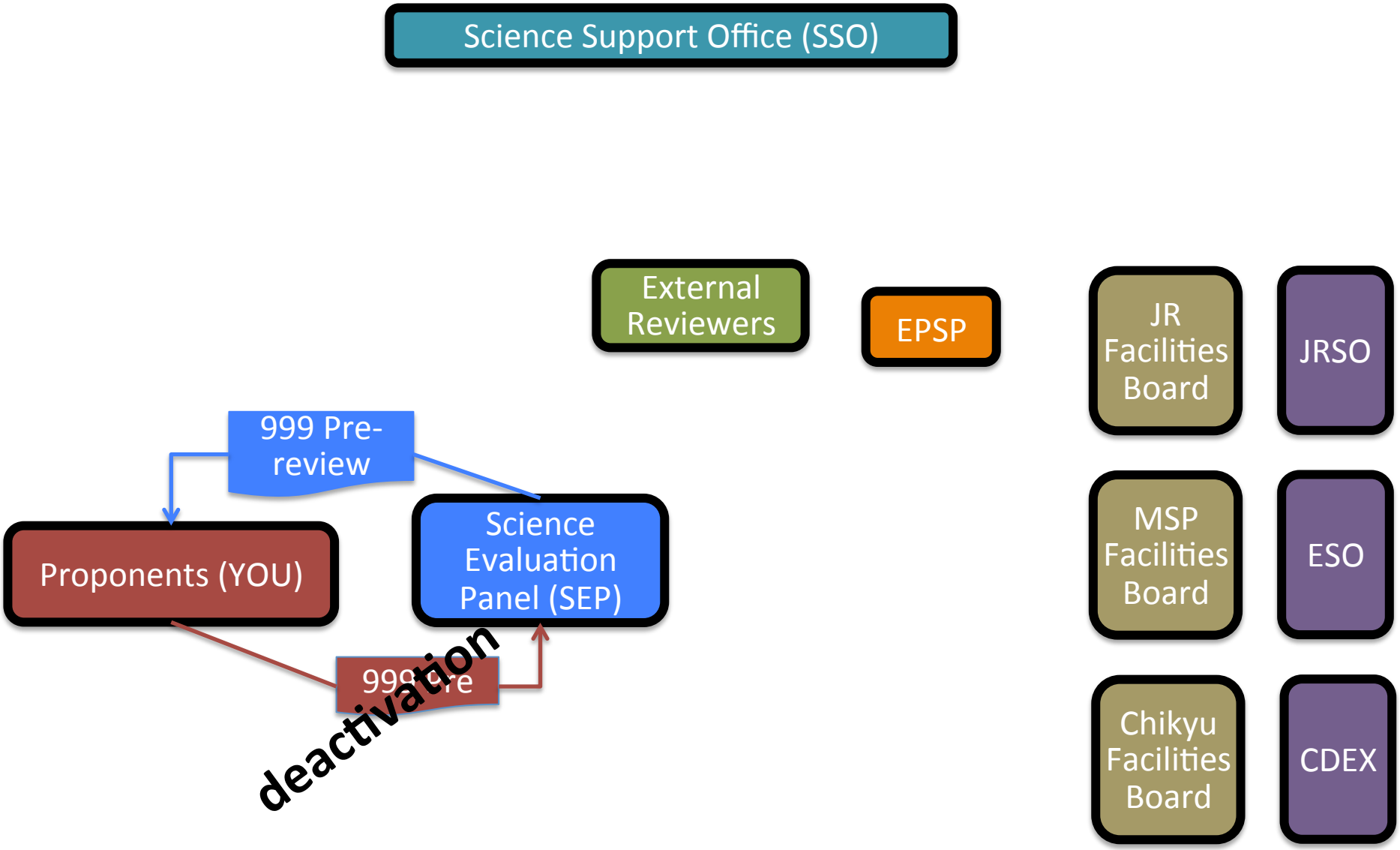
- To what degree does the integrated experimental design of site characterization, drilling, sampling, measurements, and downhole experiments constitute a compelling and feasible scientific proposal?
  - *SEP deactivate the pre-proposal or full proposal if there isn't a strong, strategic, drilling plan, including alternate sites, to address the science question/hypothesis.*
  - *SEP aims to give a clear signal to the proponents about how to improve the drilling plan, if needed. In such a case, SEP encourages proponents to come back with a new pre-proposal or full proposal (but only if there is a strong science question/hypothesis).*

- Will the proposal significantly advance one or more goals of the Science Plan?

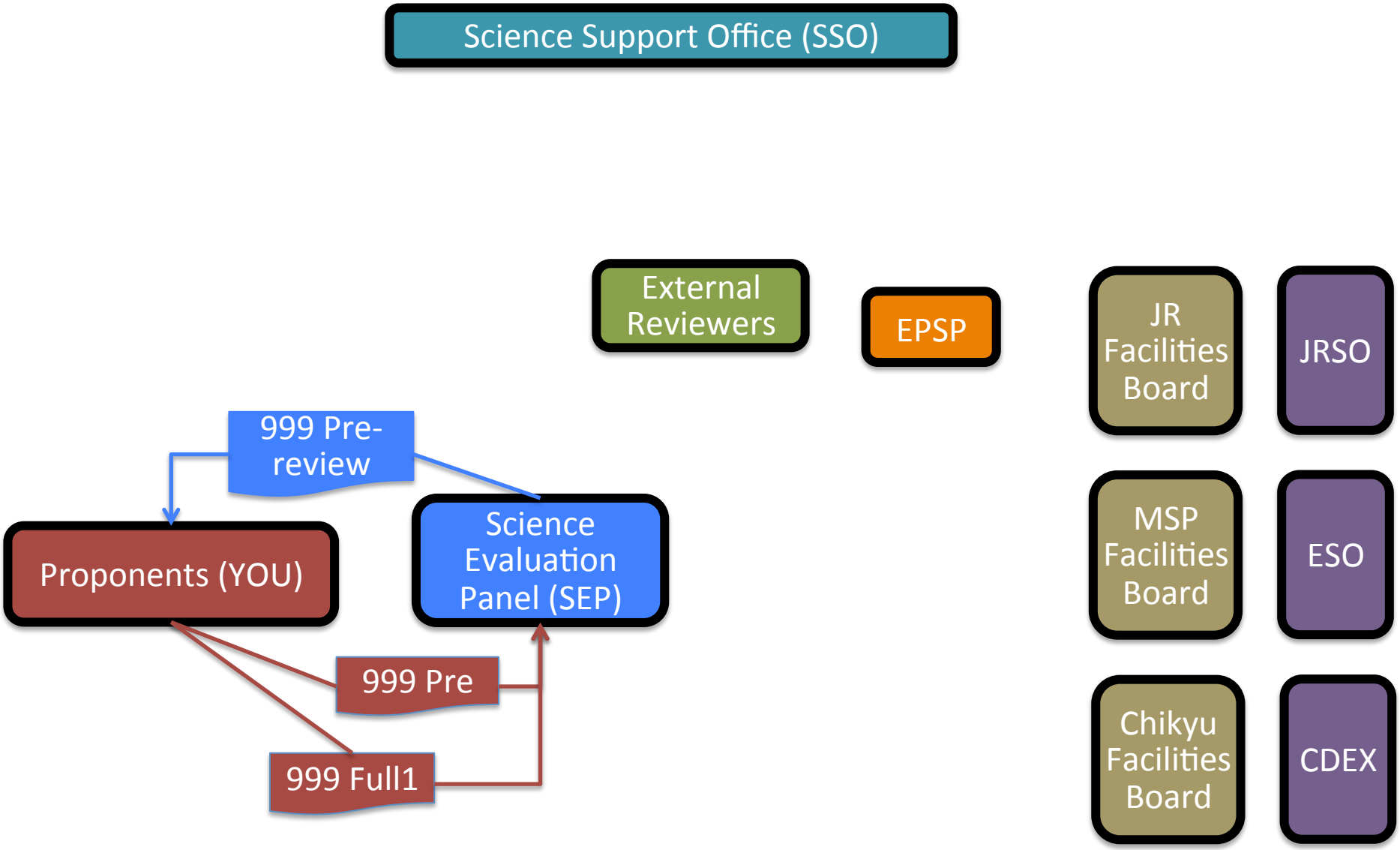
- Would the proposal engage new communities or other science programs into the drilling program?



SEP typically meets in January and June
SEP watchdogs are assigned to your proposal, SEP submits their review of 999-Pre



Scenario 1: SEP deactivates your proposal



Scenario 2: Using SEP reviews as guidance, you submit 999-Full1

International Ocean Discovery Program

Watchdog Preparation of Proposal Reviews

- **WD1** presents the science case of the proposal after consultation with the other assigned WDs
- **WD2** advises the WD1 on the science case, and WD2 writes the science part of the response letter to proponents (together with WD1)
- **WD3** presents the new site survey data after consultation with the other assigned WDs, unless there are no new data. If no data, then WD3 advises on data that are necessary.
- **WD4** advises the WD3 on the site survey data, and WD4 writes the site survey part of the response letter to proponents (together with WD3).
- **WD5** advises watchdogs 1-4 on the drilling plan, platform, technical issues and feasibility of the proposed program. WD5 writes a statement of these issues in the response letter

What Makes a Full Proposal Excellent?

- Strong and compelling science questions/hypotheses of global importance
- Innovative with potential for success
- Responsive to the input from SEP

What Will Cause a Full Proposal to be Declined?

- Science is incremental
- Science is one-sided (doesn't consider alternative hypotheses)
- Science addresses a regional question not of global significance
- Proponents are unresponsive to review comments
- Site survey data are insufficient to underpin the science or conduct operations safely

What Science Evaluation Panel and Environmental Protection and Safety Panel Watch For…

- Is this the right place to drill for the science?
- Are there any problems with the site that will affect recovery?
- Are there any hazards at the site?
- What can we predict about the lithology from the images and does that affect possible success?
- Have they adequately determined velocity in order to estimate target depths and thus drilling times?

Objective: to develop the data package so that the proposal may be forwarded to the Facility Board (FB)

Forward to FB

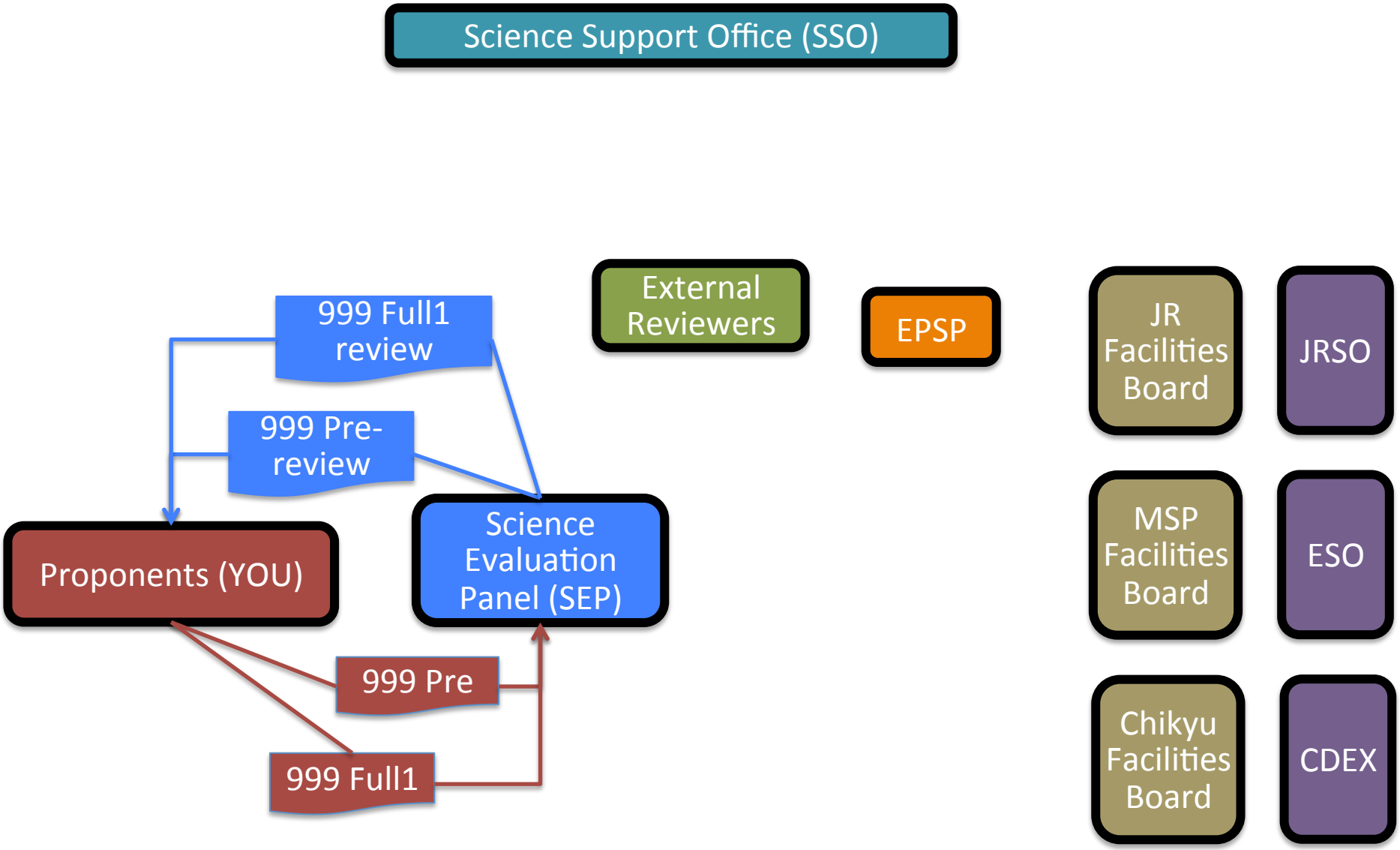
1. Data reviewed by SEP are sufficient to support the scientific objectives of the drilling effort and there are no further concerns
2. Data reviewed by SEP are sufficient to support the scientific objectives of the drilling effort, but minor concerns require follow-up by proponents (specify in text)

Holding Bin, Revise or Deactivate

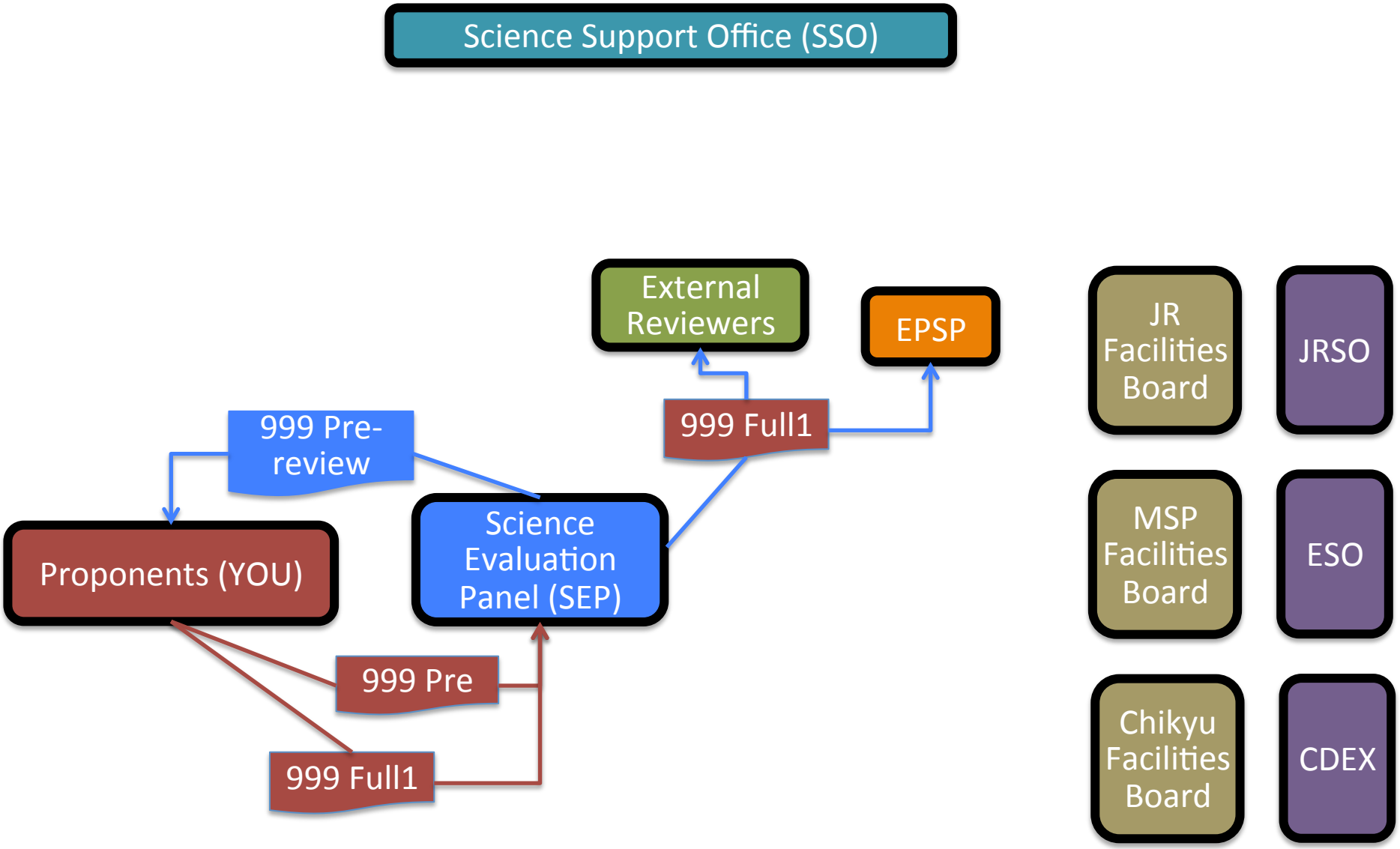
3. Data reviewed by SEP are insufficient to support the drilling effort, but other data are believed to exist; and/or data are not annotated or organized sufficiently to fully review, or there are scientific concerns
4. Data reviewed by SEP are insufficient to support the drilling effort, and additional data are not believed to exist
5. No data have been reviewed by SEP

"Insufficient" indicates that the data package is not sufficient to convince the SEP that the scientific objectives can be addressed. For example: 1) the data package may lack items that are fundamental to determining the correct site location or target depth; 2) the data may be of insufficient resolution to demonstrate the existence of targeted strata; 3) the data may not demonstrate unequivocally that the proposed locations are correct (e.g. sites are not plotted correctly or mismatches exist between navigation files and proposed locations); 4) site locations are deemed to be inadequate for addressing the objectives (e.g. missing critical sections, misinterpretations, science or safety concerns, etc.).

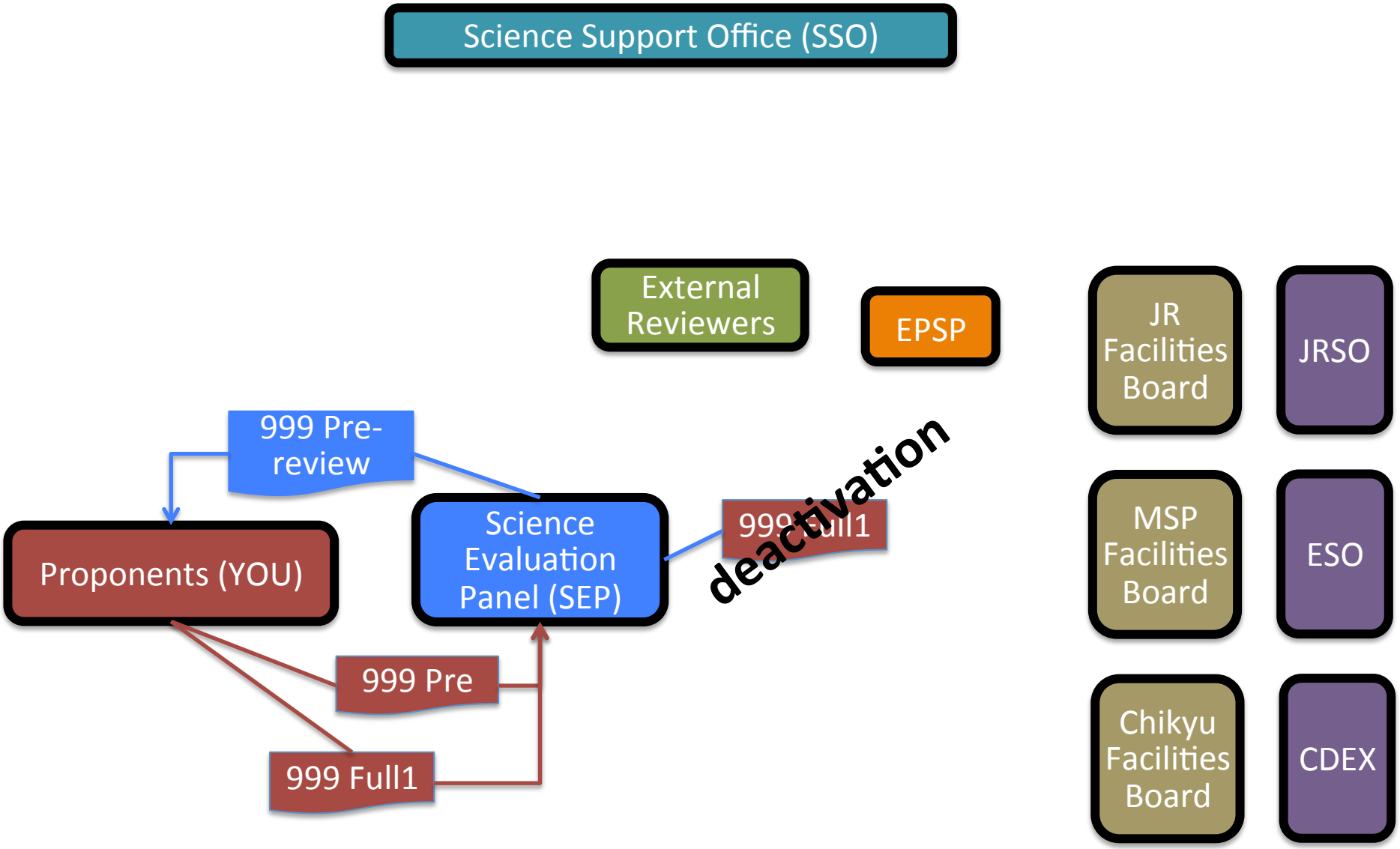
"Minor concerns" may include missing items or questions that do not affect the assessment that drilling is warranted at proposed sites, meaning the objectives can be met based on existing data despite the concerns. Examples include: 1) missing image files (e.g. bathymetry); 2) minor issues with velocity that may slightly affect the proposed depth of penetration; 3) minor navigation issues. These can be addressed while proposal resides at the FB.



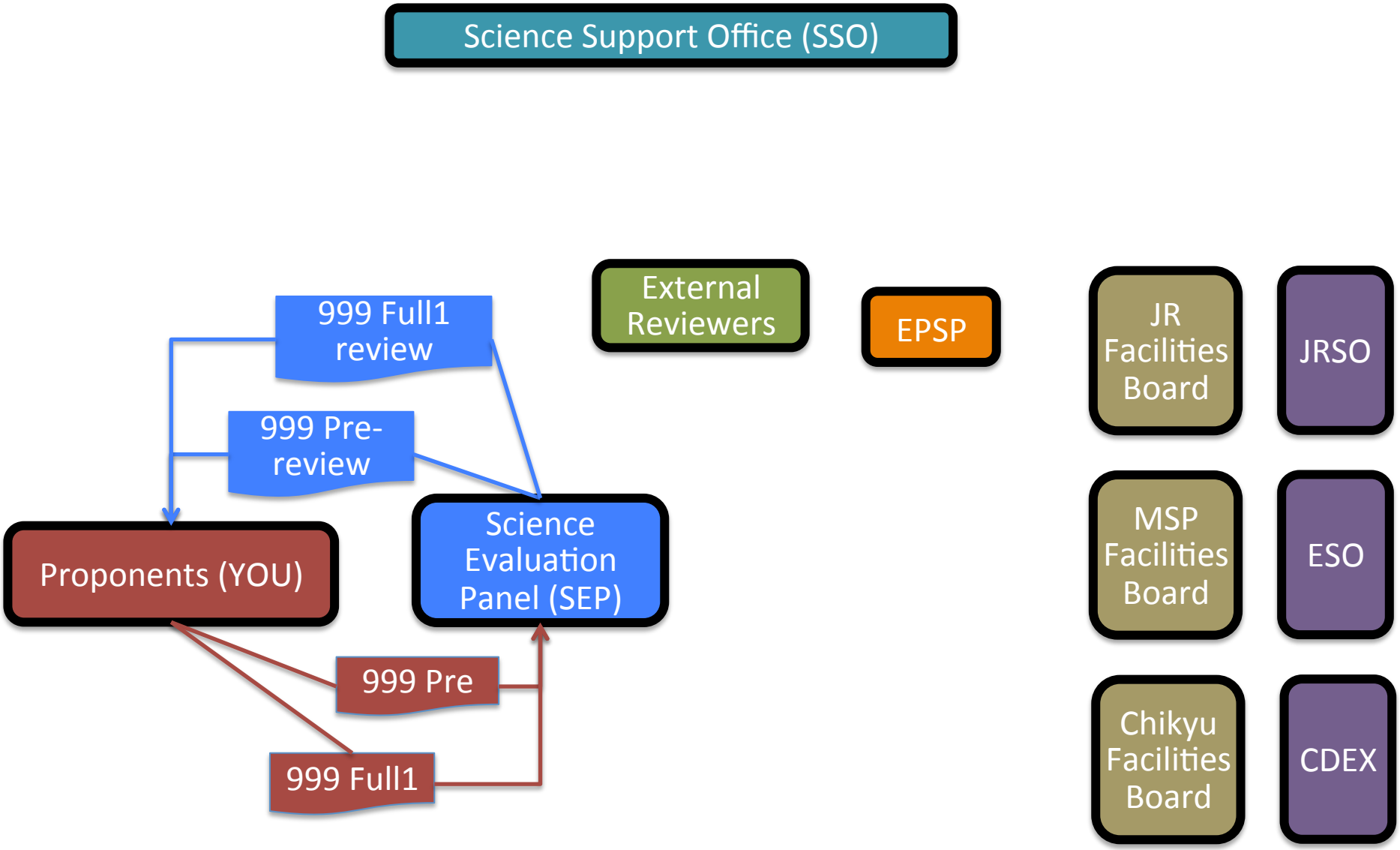
Scenario 1: SEP reviews 999-Full1, and asks for revision



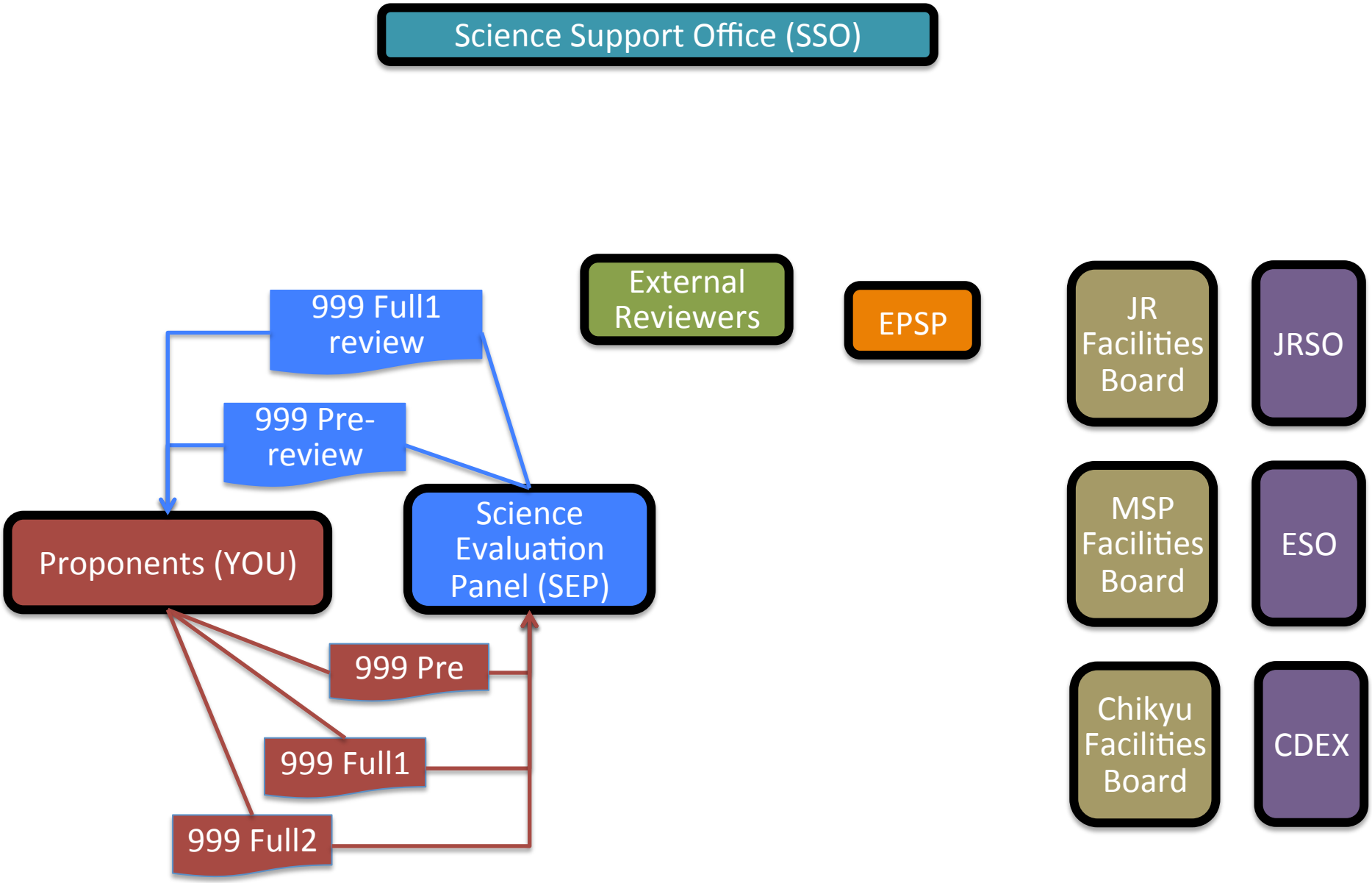
Scenario 2: SEP sends 999-Full1 out for external review and to EPSP



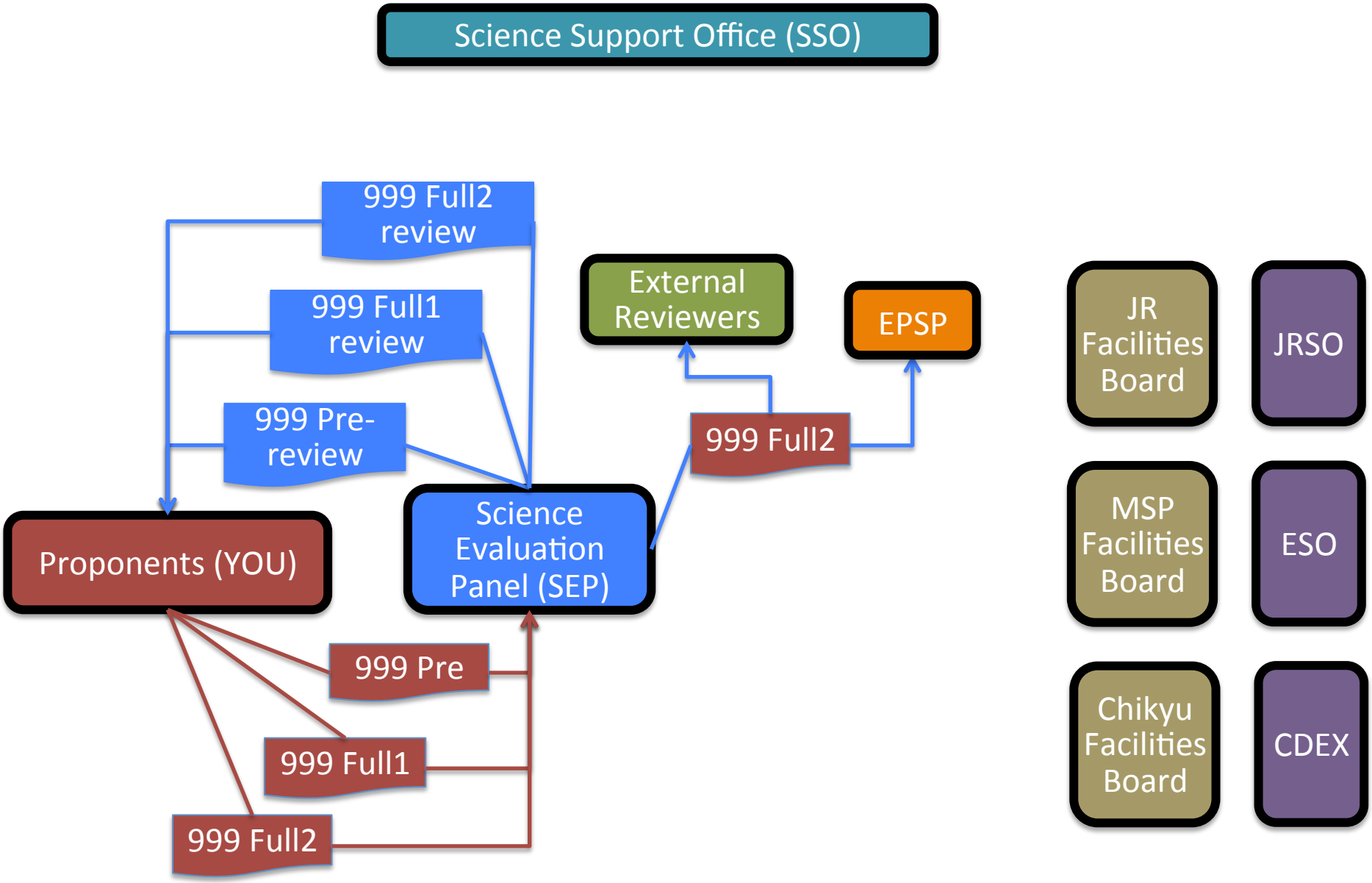
Scenario 3: SEP deactivates 999-Full1



Let's assume Scenario 1: SEP reviews 999-Full1, and asks for revision



Using SEP reviews as guidance, you submit 999-Full2



Scenario 1: SEP sends to external review & to EPSP, and may send you a review to address with an addendum

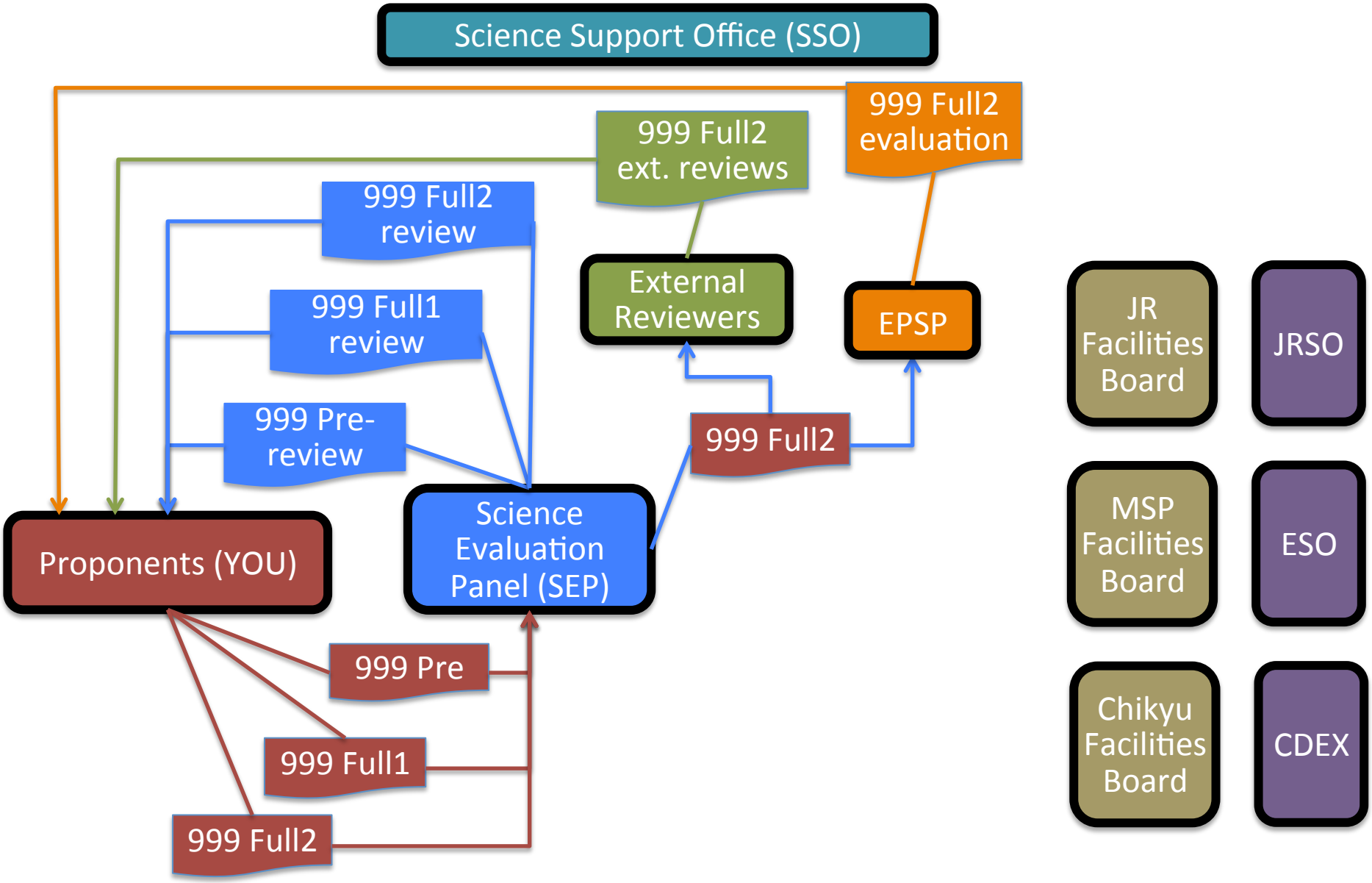
Environmental Protection and Safety Panel

- Examines every site you propose for concerns over environmental effects

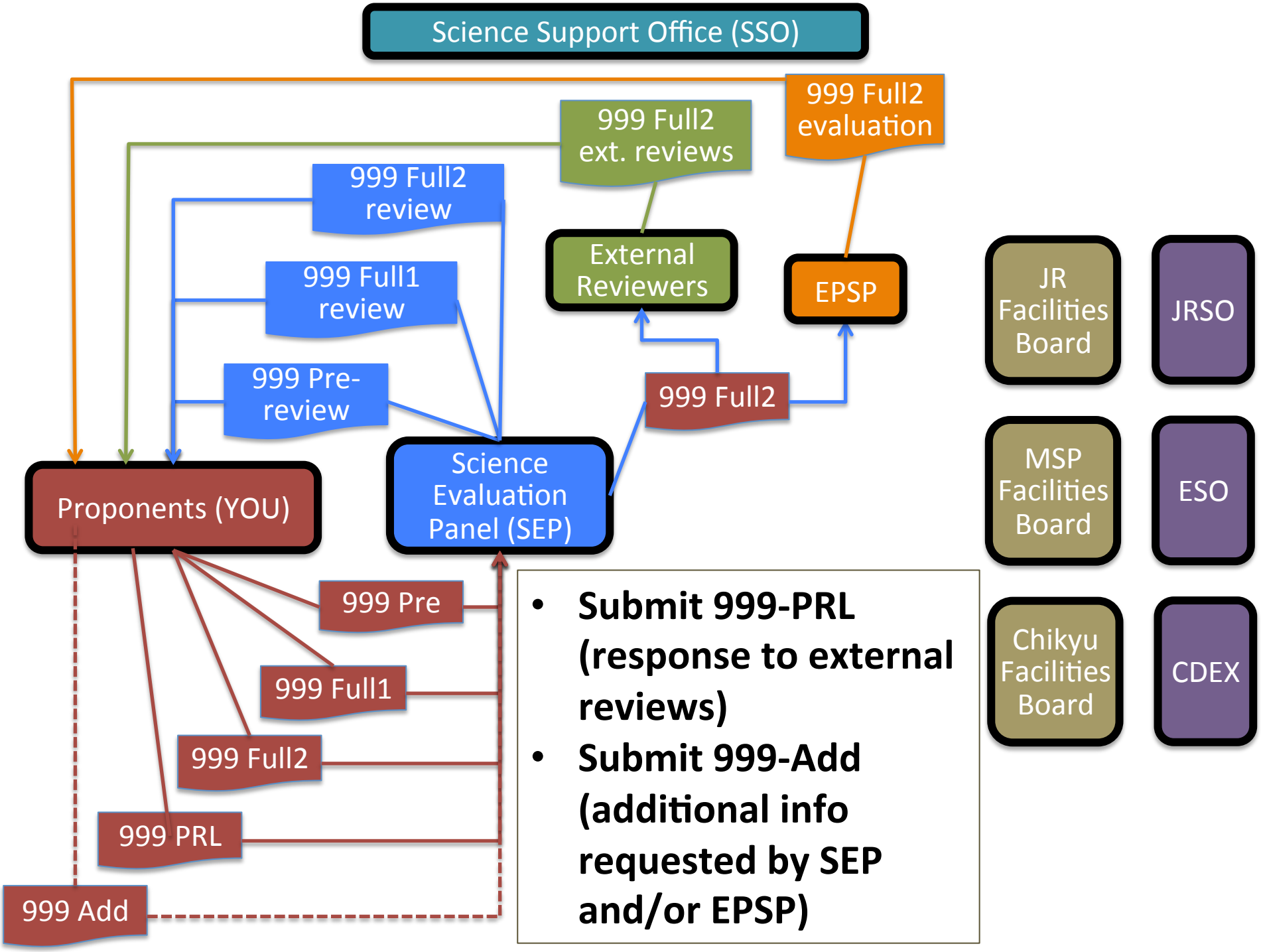
- Examines every site you propose for concerns over hydrocarbons and overpressure

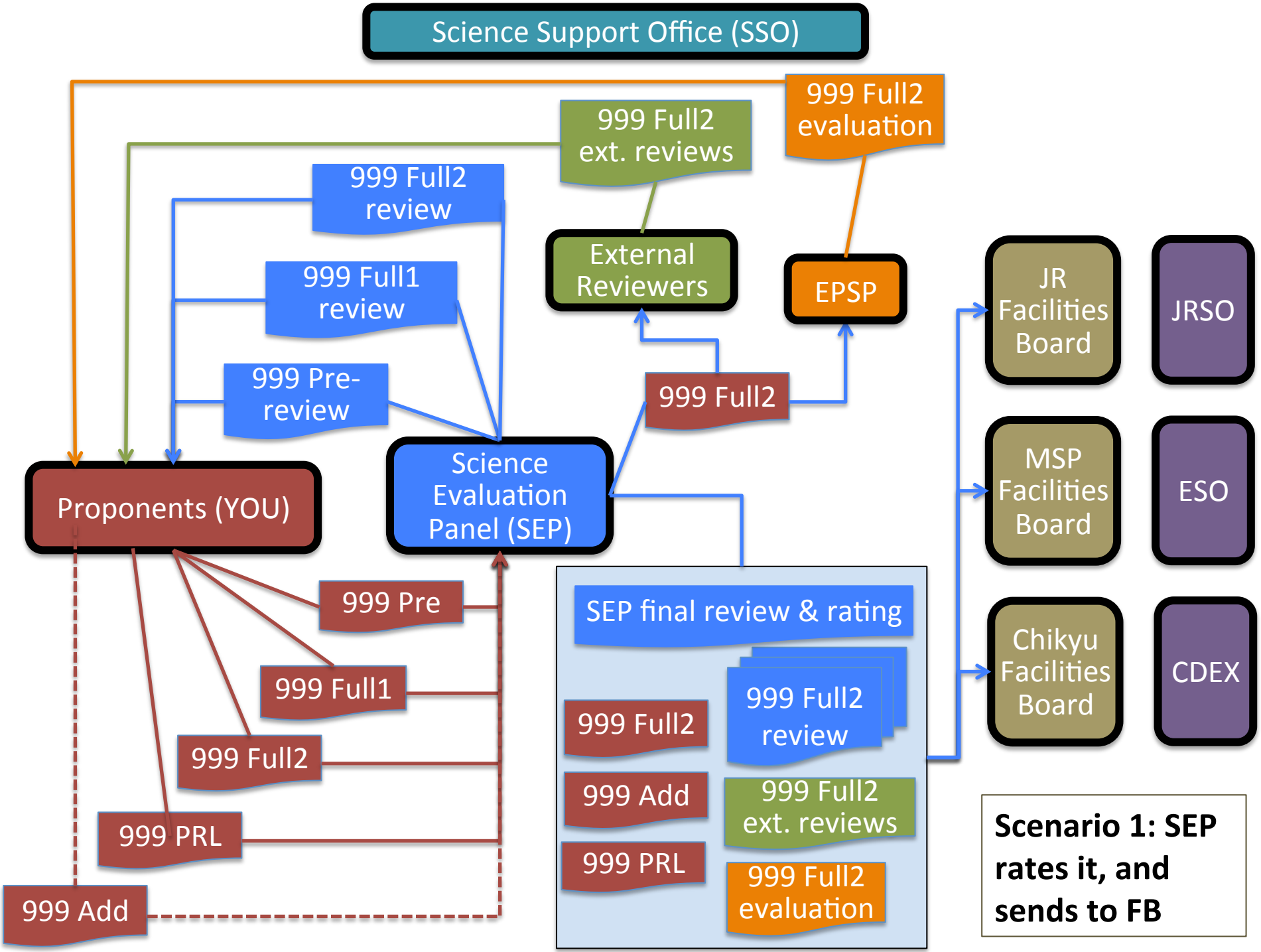
- JOIDES Resolution and most Mission Specific Platforms do not have a blow-out preventer

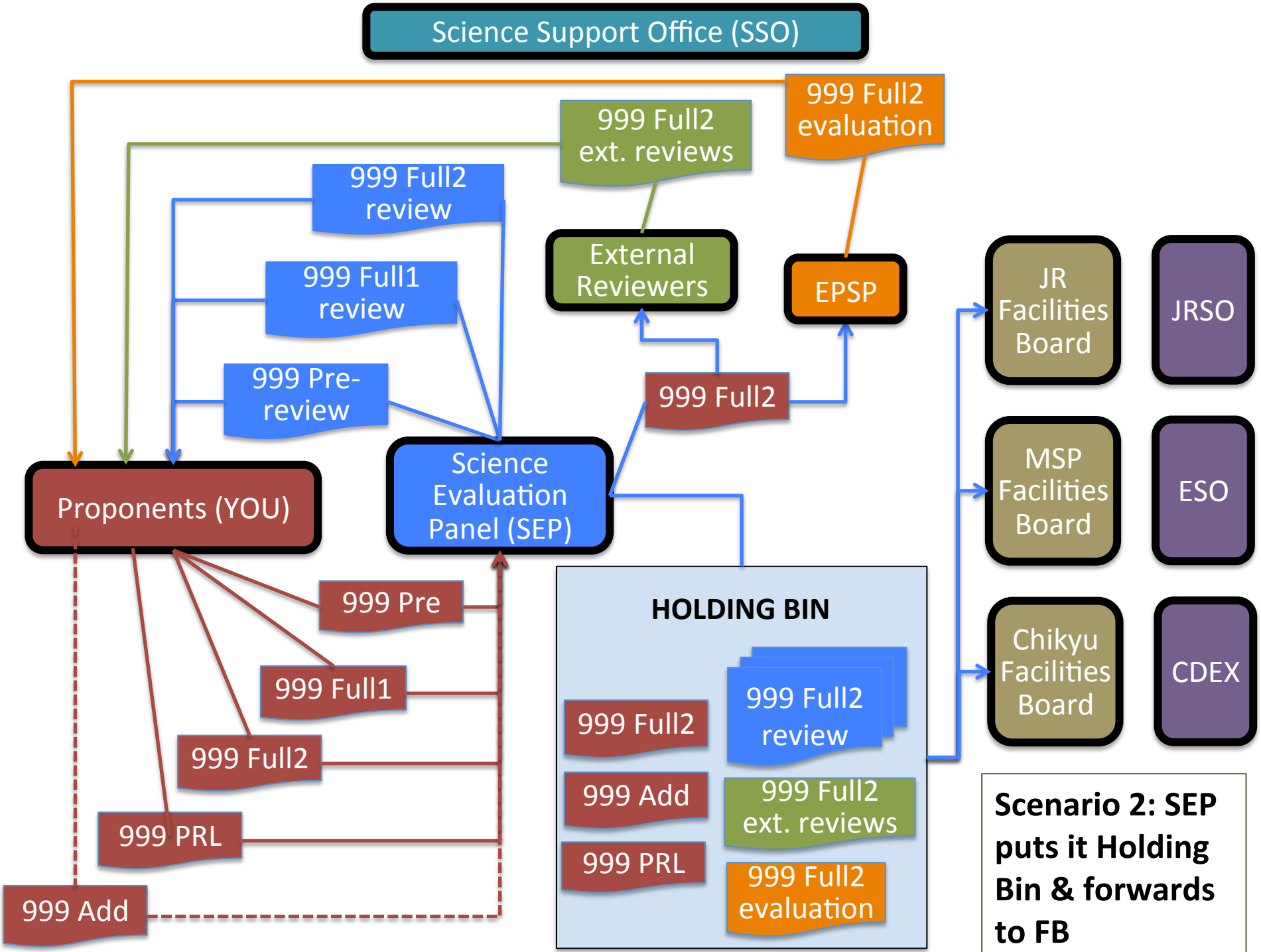
- EPSP has VETO rights

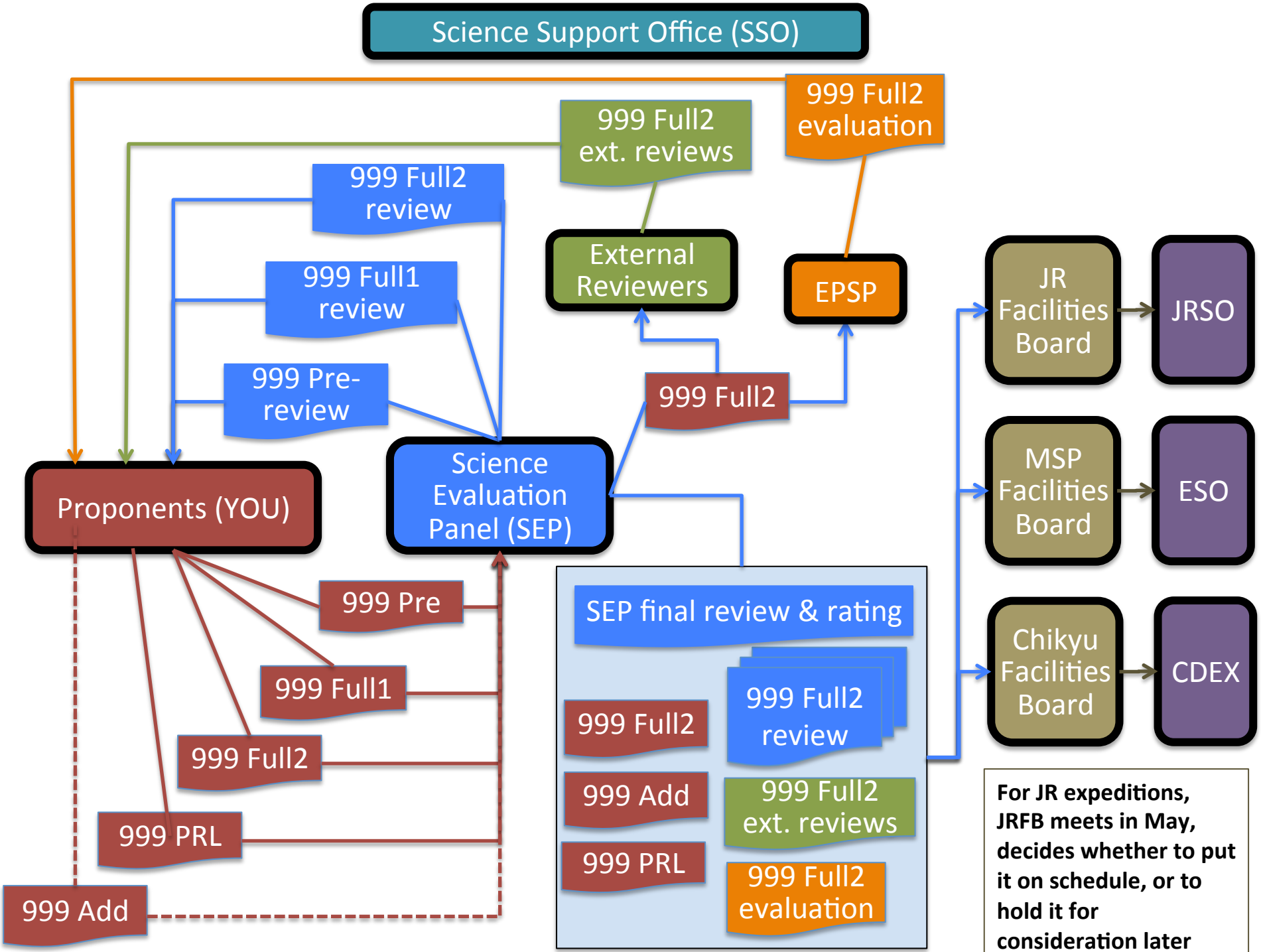


You receive External Reviews and EPSP evaluation

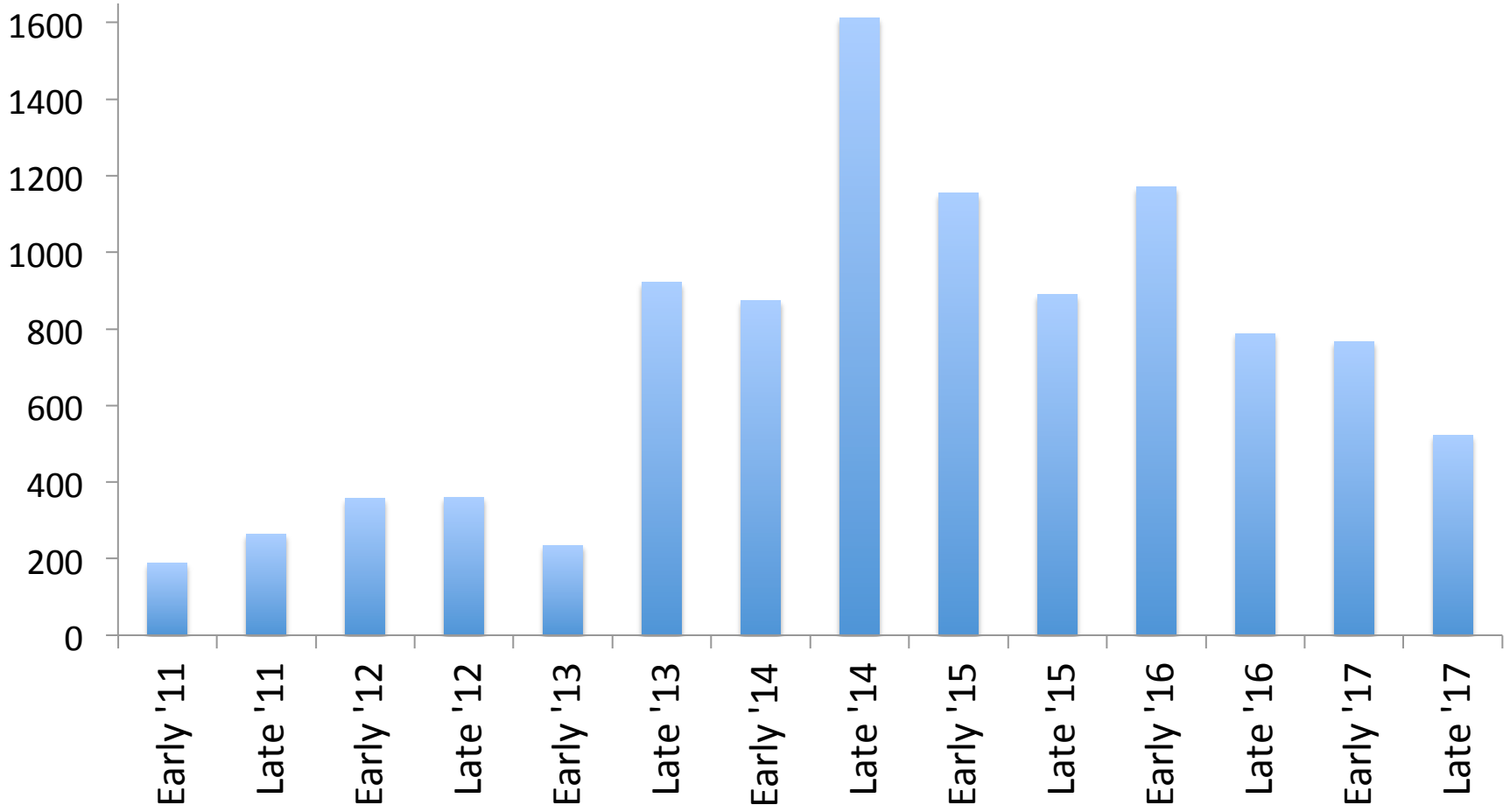

Science Support Office (SSO)
999 Full2 evaluation
999 Full2 ext. reviews
999 Full2 review
999 Full1 review
999 Pre-review
External Reviewers
EPSP
999 Full2
Proponents (YOU)
Science Evaluation Panel (SEP)
999 Pre
999 Full1
999 Full2
999 PRL
999 Add
JR Facilities Board
JRSO
MSP Facilities Board
ESO
Chikyu Facilities Board
CDEX
• Submit 999-PRL (response to external reviews)
• Submit 999-Add (additional info requested by SEP and/or EPSP)


Science Support Office (SSO)
999 Full2 evaluation
999 Full2 ext. reviews
999 Full2 review
External Reviewers
EPSP
999 Full1 review
999 Pre-review
999 Full2
JR Facilities Board
JRSO
MSP Facilities Board
ESO
Chikyu Facilities Board
CDEX
Proponents (YOU)
Science Evaluation Panel (SEP)
999 Pre
999 Full1
999 Full2
999 PRL
999 Add
SEP final review & rating
999 Full2
999 Full2 review
999 Add
999 Full2 ext. reviews
999 PRL
999 Full2 evaluation
Scenario 1: SEP rates it, and sends to FB

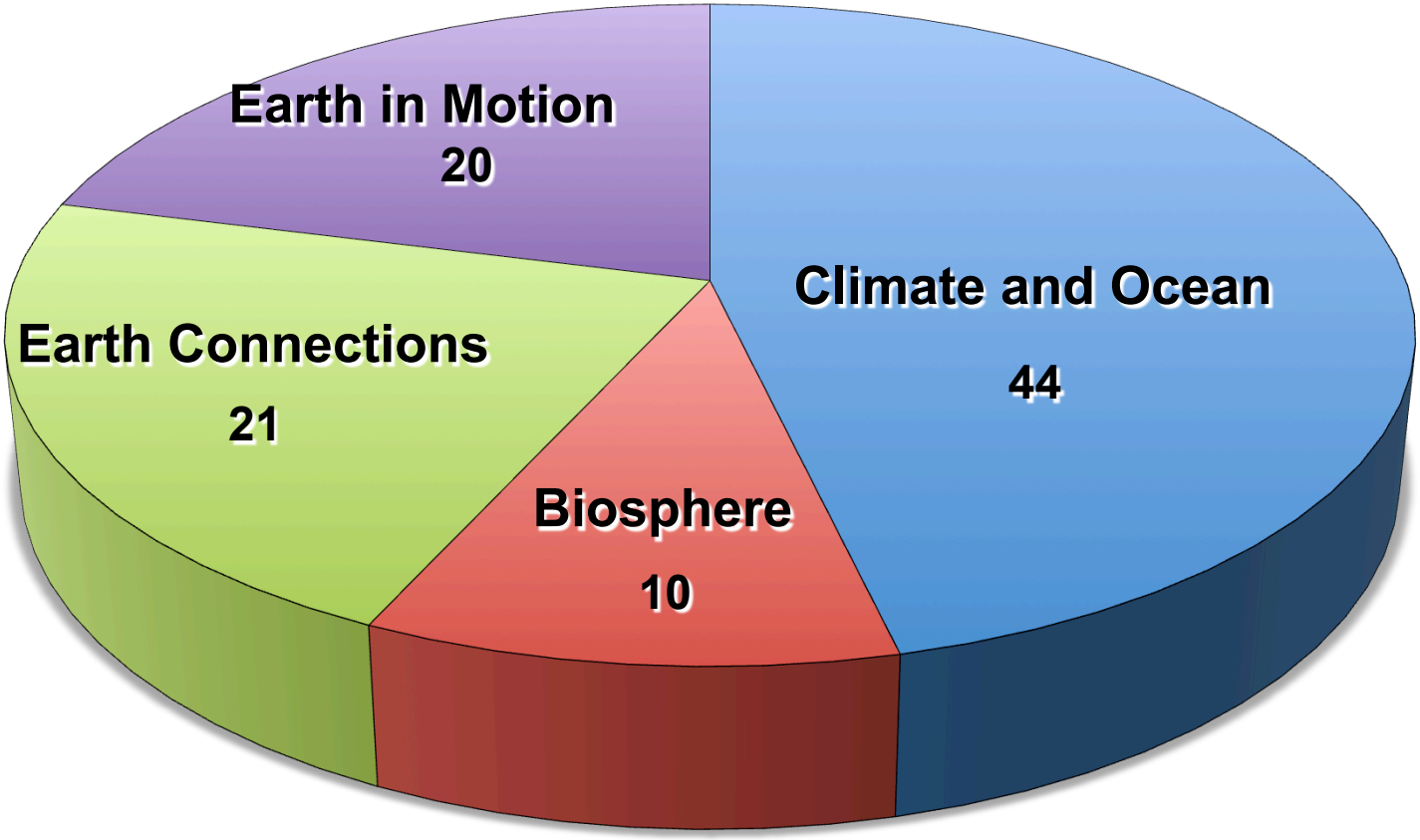

Science Support Office (SSO)
999 Full2 evaluation
999 Full2 ext. reviews
999 Full2 review
External Reviewers
EPSP
999 Full1 review
999 Pre-review
999 Full2
JR Facilities Board
JRSO
MSP Facilities Board
ESO
Chikyu Facilities Board
CDEX
Proponents (YOU)
Science Evaluation Panel (SEP)
999 Pre
999 Full1
999 Full2
999 PRL
999 Add
HOLDING BIN
999 Full2
999 Full2 review
999 Add
999 Full2 ext. reviews
999 PRL
999 Full2 evaluation
Scenario 2: SEP puts it Holding Bin & forwards to FB


Science Support Office (SSO)
999 Full2 evaluation
999 Full2 ext. reviews
999 Full2 review
External Reviewers
EPSP
999 Full1 review
999 Pre-review
999 Full2
Proponents (YOU)
Science Evaluation Panel (SEP)
JR Facilities Board
JRSO
MSP Facilities Board
ESO
Chikyu Facilities Board
CDEX
999 Pre
999 Full1
999 Full2
999 PRL
999 Add
SEP final review & rating
999 Full2
999 Full2 review
999 Add
999 Full2 ext. reviews
999 PRL
999 Full2 evaluation
For JR expeditions, JRFB meets in May, decides whether to put it on schedule, or to hold it for consideration later

File Submissions to SSDB



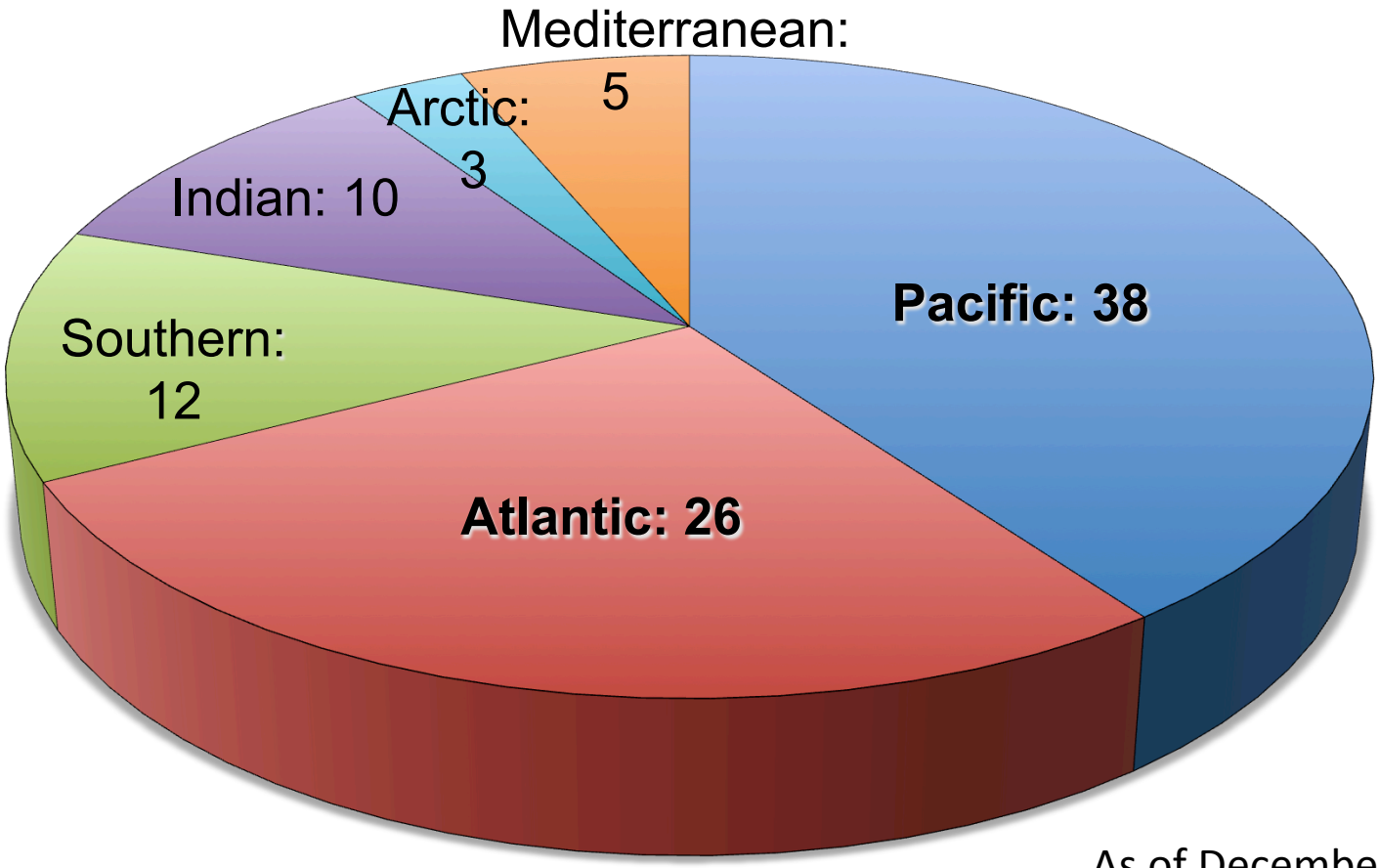
Active proposals: 95
by science plan themes



As of December 5, 2017

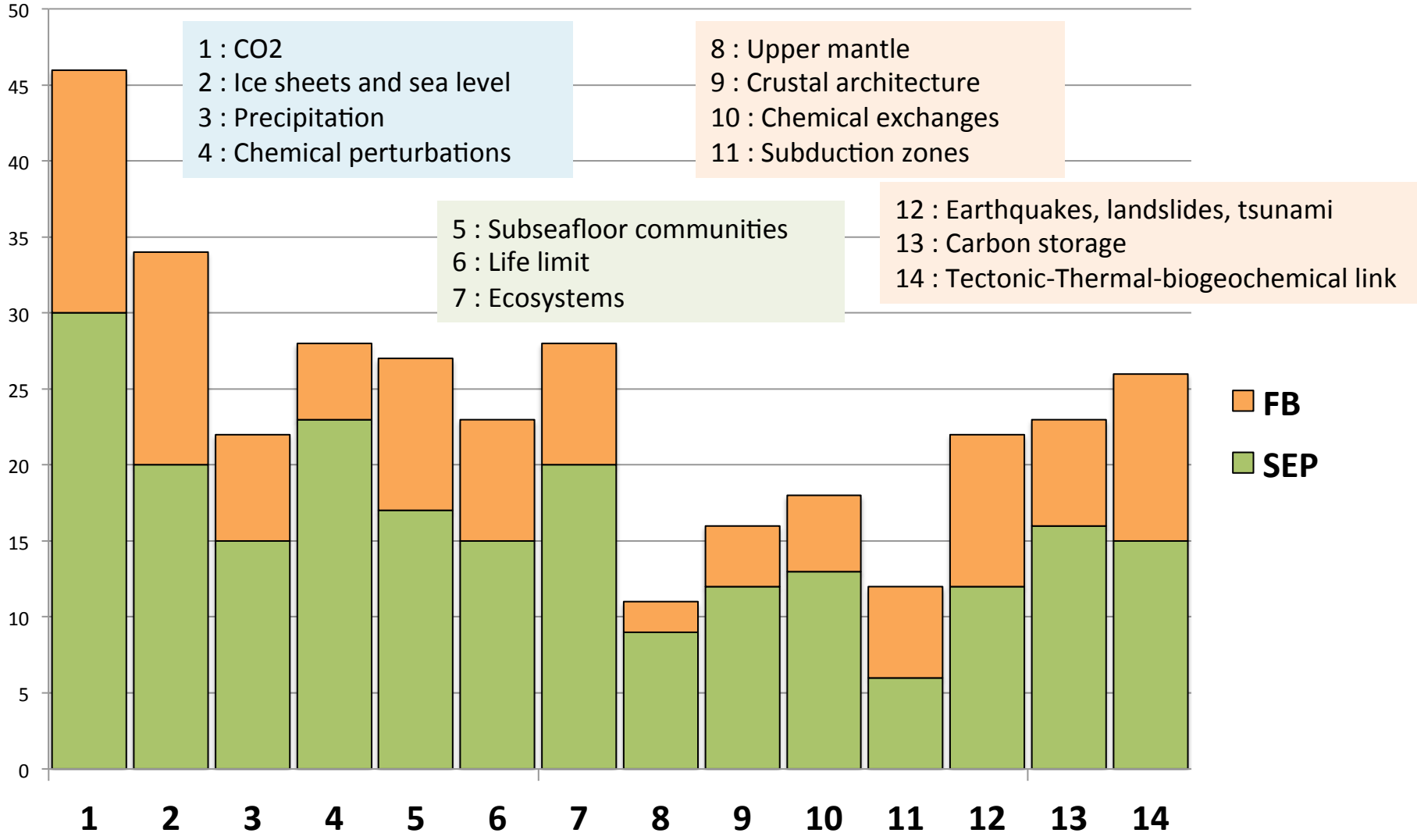
Active proposal status: 95

by target ocean



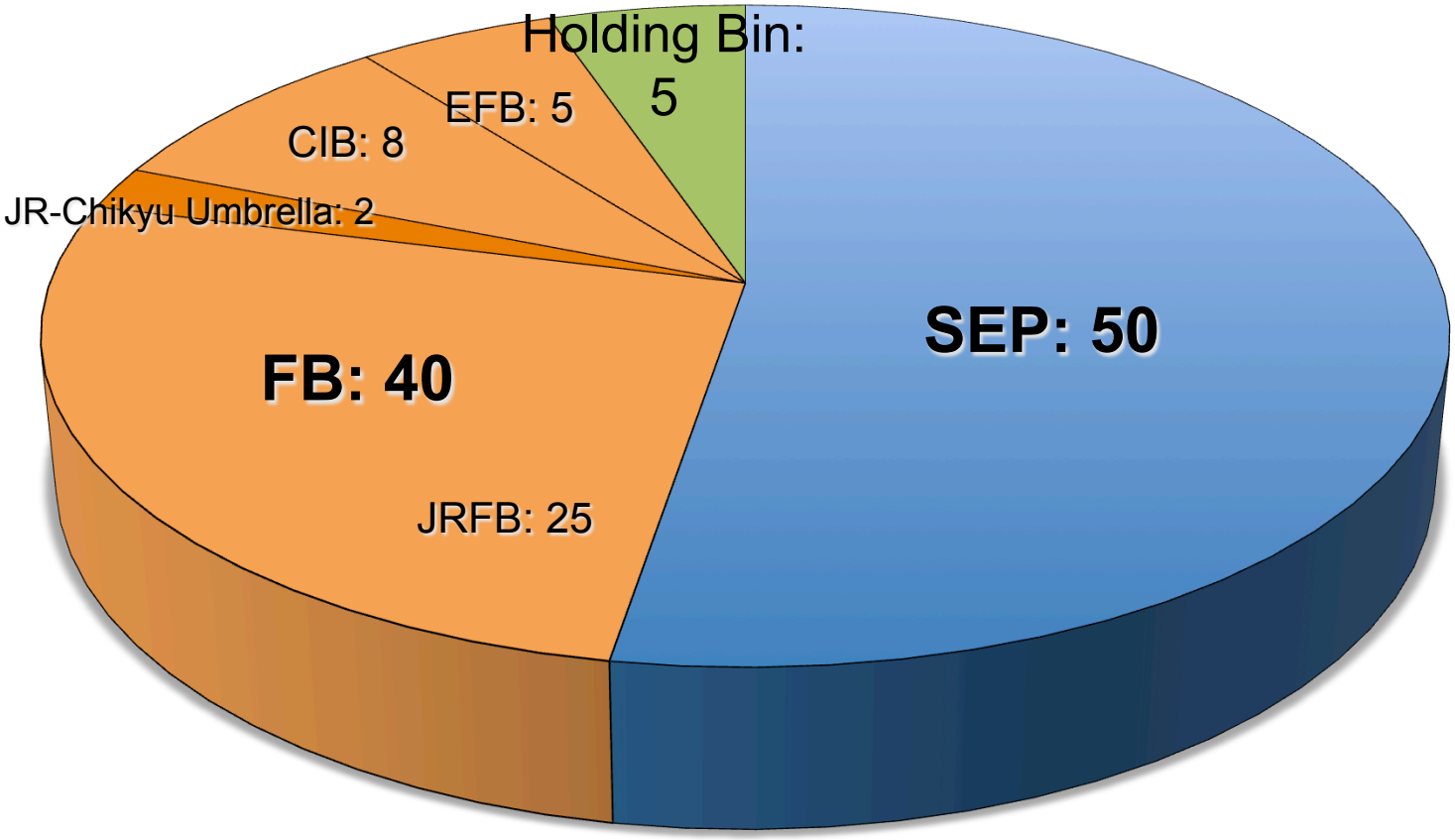
As of December 5, 2017

How many proposals address which challenges?



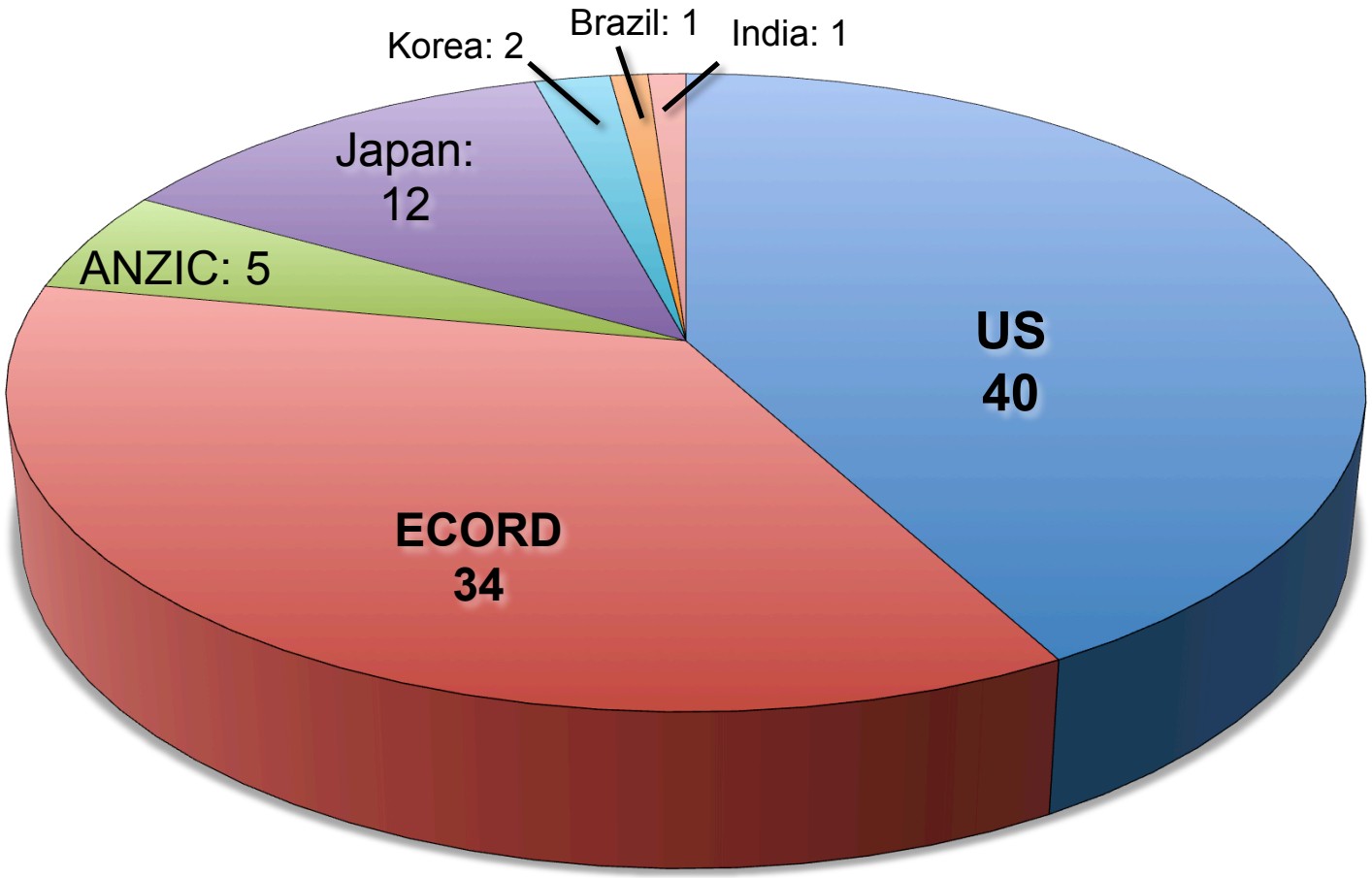
As of December 5, 2017

Active proposal status:95
by review stage



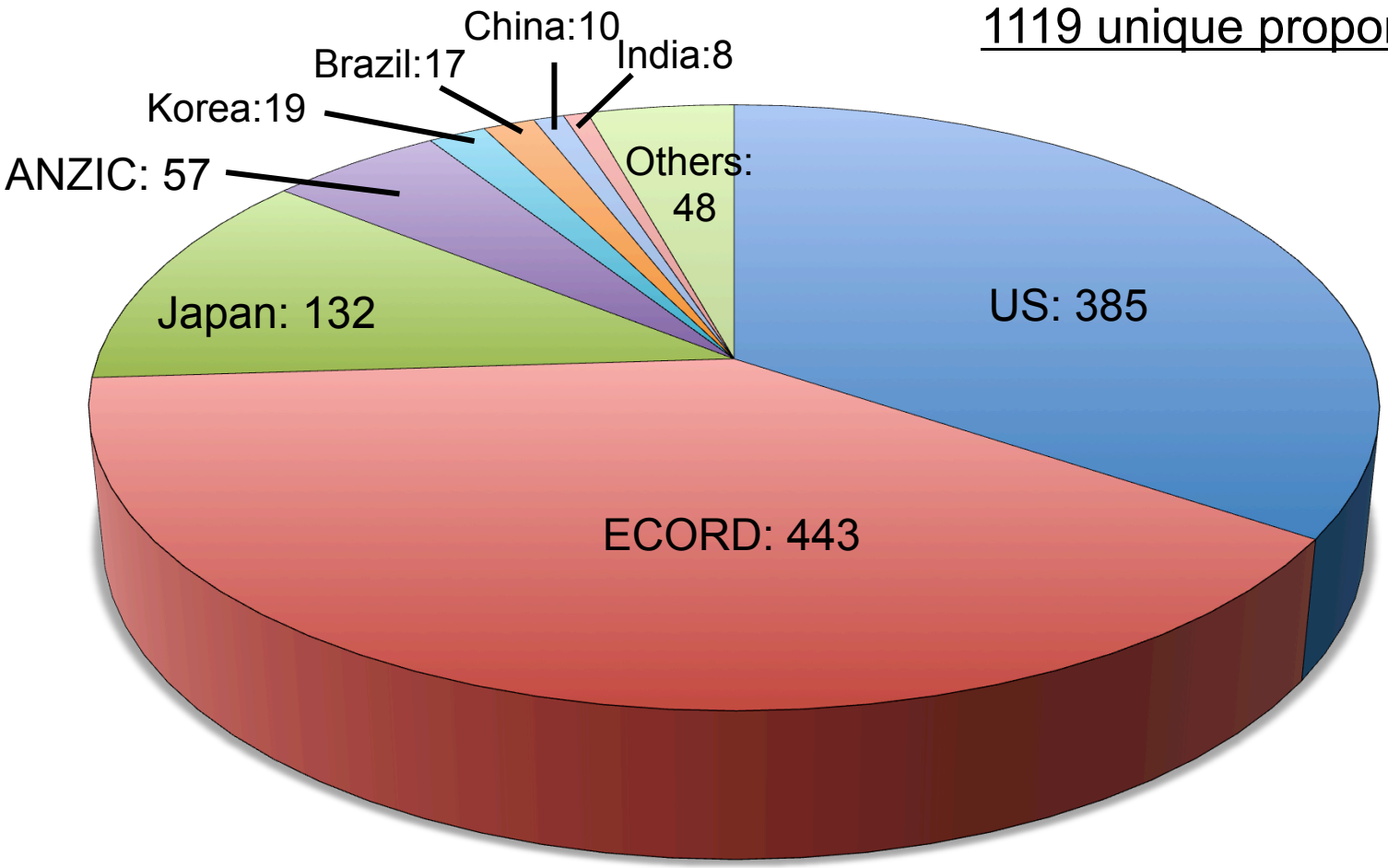
As of December 5, 2017

Active proposals: 95
by lead proponent's member affiliation



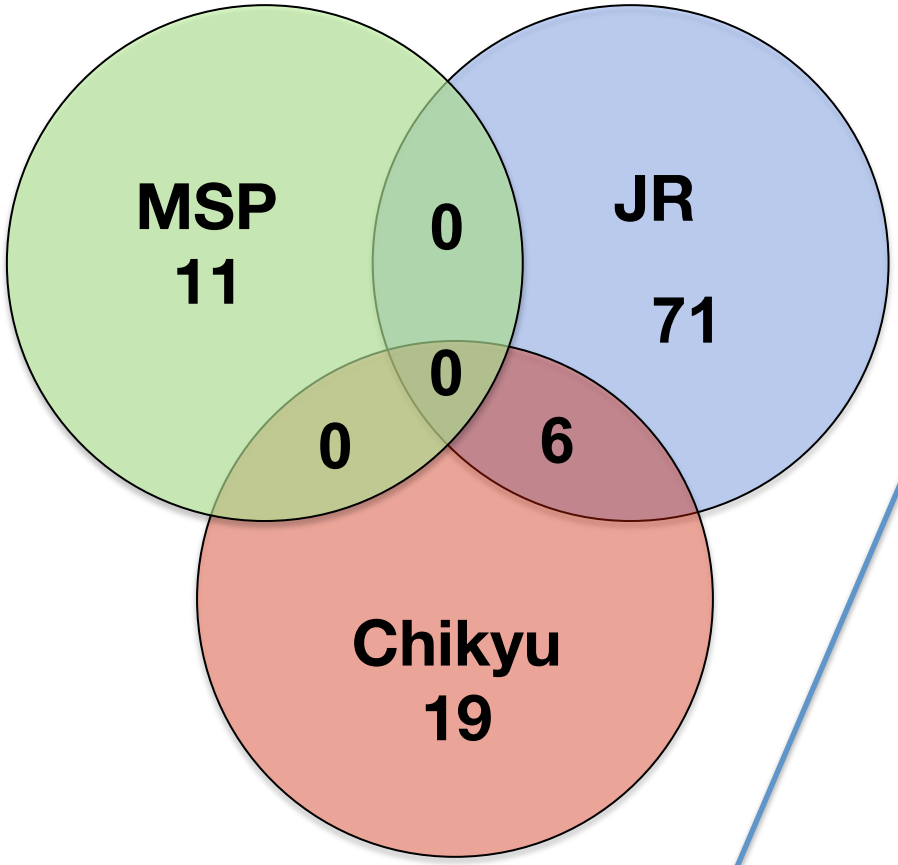
As of December 5, 2017

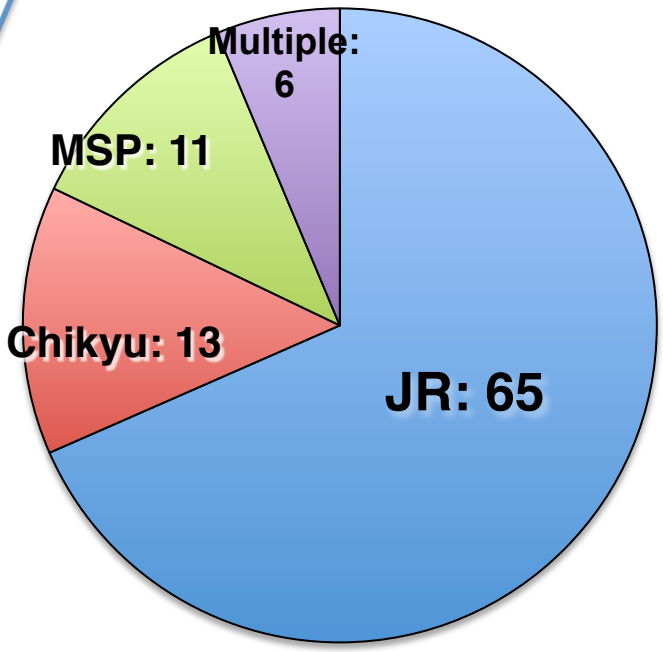
Active proponent distribution



As of December 5, 2017

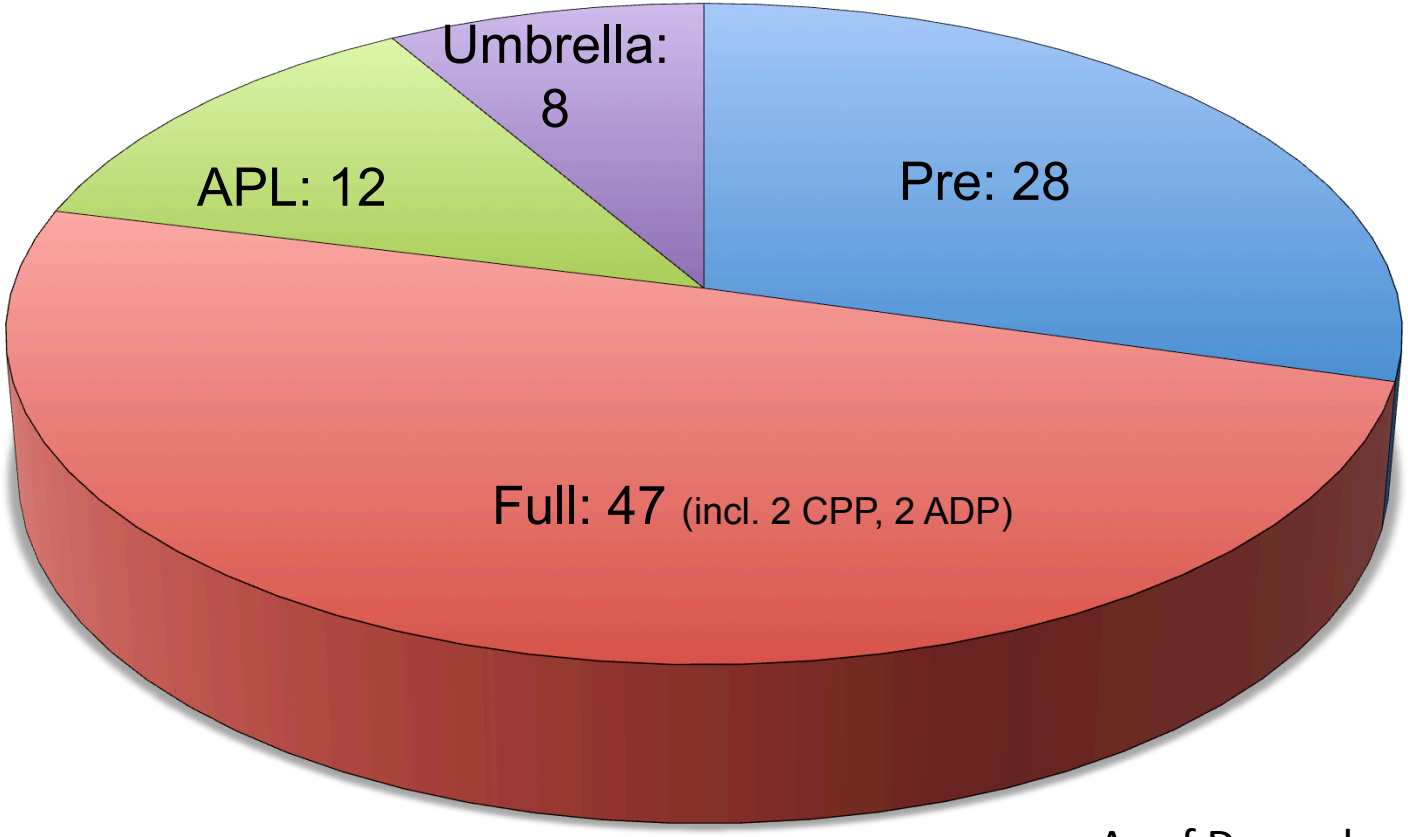
Drilling Platforms for 95 Active Proposals





As of December 5, 2017

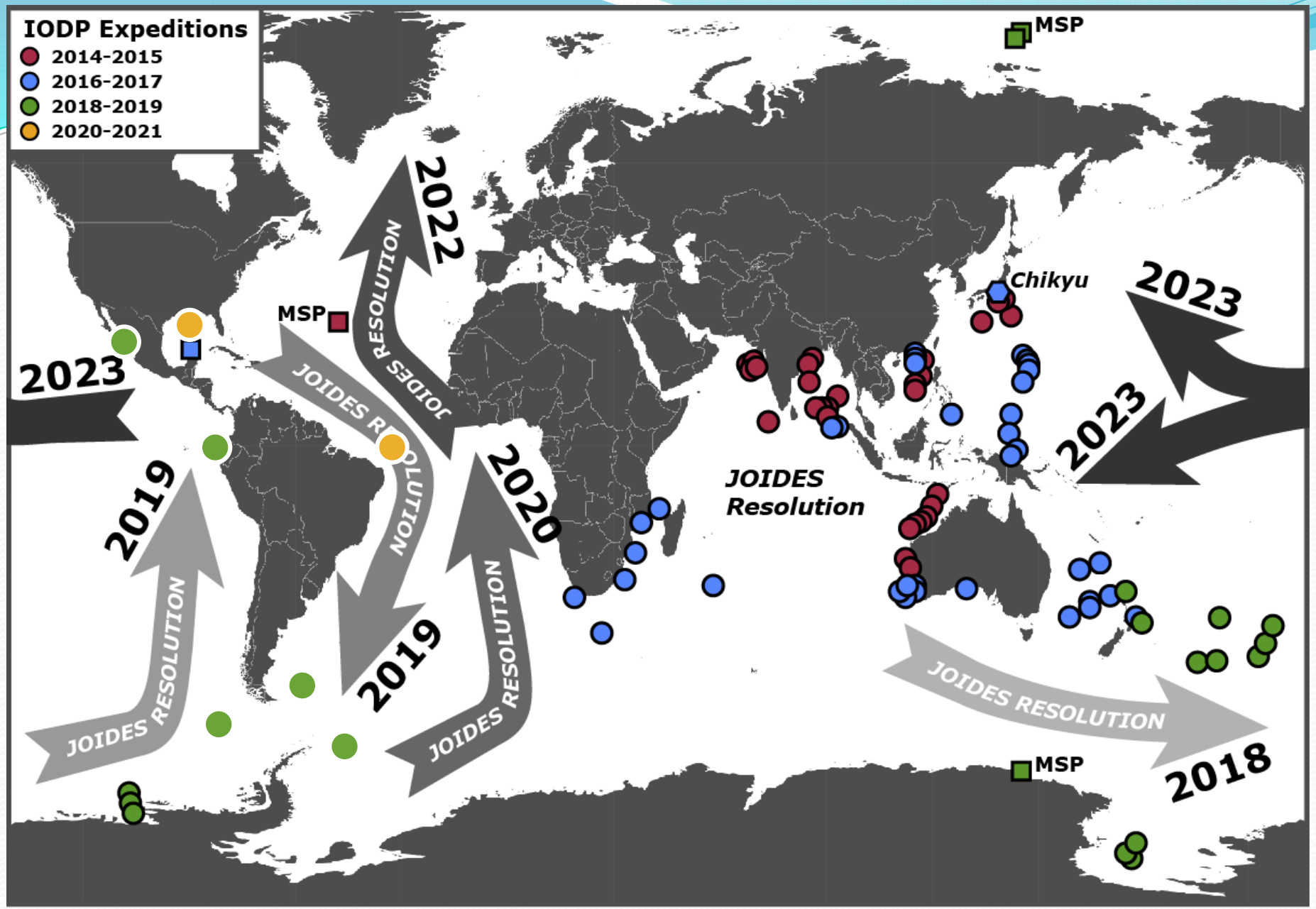
Active proposals: 95
by proposal category



As of December 5, 2017

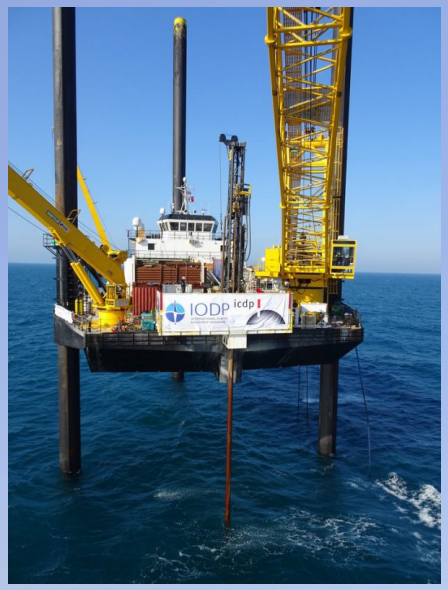
- Proposals currently with the SEP that likely need site survey work
  - 864- Dunkley-Jones- Equatorial Atlantic Gateway
  - 882- Paula Vannuchi- Brazilian Equatorial Margin Tectonics
  - 914- Luigi Jovanne- Brazilian Equatorial Margin Paleoceanography
  - 909- Paul Knutz- NW Greenland Glaciated Margin
  - 911- Jim Wright- Argentine Margin Paleoceanography
  - 913- Denis Cukur- East China Sea Rifting
  - 917- Chris Lowery- Florida Straits Gateway Record
  - Maybe others: 859, 895, 900, 903…
- 24 proposals either for site survey or drilling were put forth at the IODP Australasian workshop. Perhaps half need site survey work (Indian Ocean, South Pacific, Southern Ocean)

- IODP NEEDS SEISMIC IMAGING!
  - 2015 SEP Consensus Statement: “The SEP wishes to convey concern regarding the increased pressures on the acquisition of academic active-source seismic data, some of which by design is conducted in support of scientific ocean drilling. Continued reduction in the international marine geoscience communities’ ability to collect seismic data in areas of scientific interest is jeopardizing the scope and impact of IODP science. The SEP consensus is that the IODP should stress the importance, both to member country funding agencies and environmental permit organizations worldwide, of high-quality subsurface images for science and safety in connection with expected continuation of IODP…”



STATUS AFTER APPROVED SCHEDULE FOLLOWING

STRALASIAN IODP REGIONAL PLANNING WORKS
Sydney University, June 2017



Preliminary Workshop outcomes
SEP meeting 21-23 June

97 participants

4 Honours/Pre-PhD students (local Sydney students)
6 PhD candidates,
16 Postdocs
11 Associate Professors ,
13 Professors
29 Professional research scientists in a variety of roles
10 Researchers/Science Managers with Government Institutions

A number of IODP, ECORD and ANZIC scientists in Program management roles (and our youngest attendee was 3 months old!)

ANZIC was represented by scientists from 17 organisations across Australia and New Zealand and the Office of the Chief Scientist of Australia.

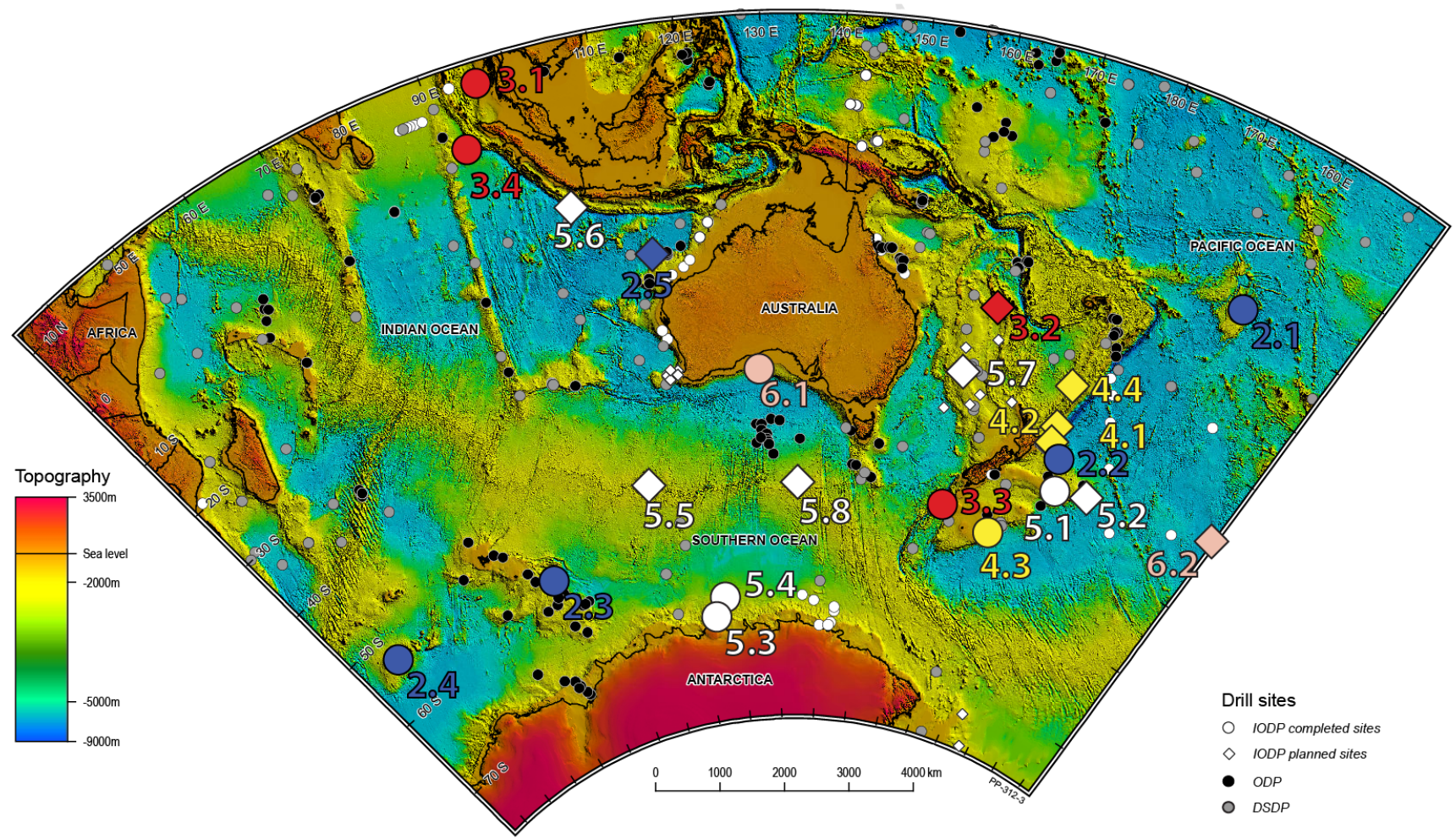
Participants work in 12 different countries, Including Australia, New Zealand, New Caledonia, Japan, India, Germany, Great Britain, France, Denmark, Sweden, The USA and Canada.

- International Institutions represented:

- AIST, Japan
- Alfred Wegener Institute, Germany
- Caltech
- Colorado School of Mines
- The Geological Survey of Denmark
- The Geological Survey of New Caledonia,
- University of Montpellier
- Imperial College, London
- JAMSTEC
- Kochi University
- Lamont-Doherty Earth Observatory
- National Institute of Oceanography, India
- Rice University
- Rutgers University
- SUNY Binghampton
- Texas A&M University
- University of Bremen
- University of Gothenburg,
- University of Leicester
- University of Manchester
- University of South Carolina
- University of Southern California
- University of South Florida
- University of Southampton
- University of Texas
- University of Tokyo
- University of Toronto
- University of Vienna
- Woods Hole Oceanographic Institute
- Yale University

- ANZIC Institutions represented:

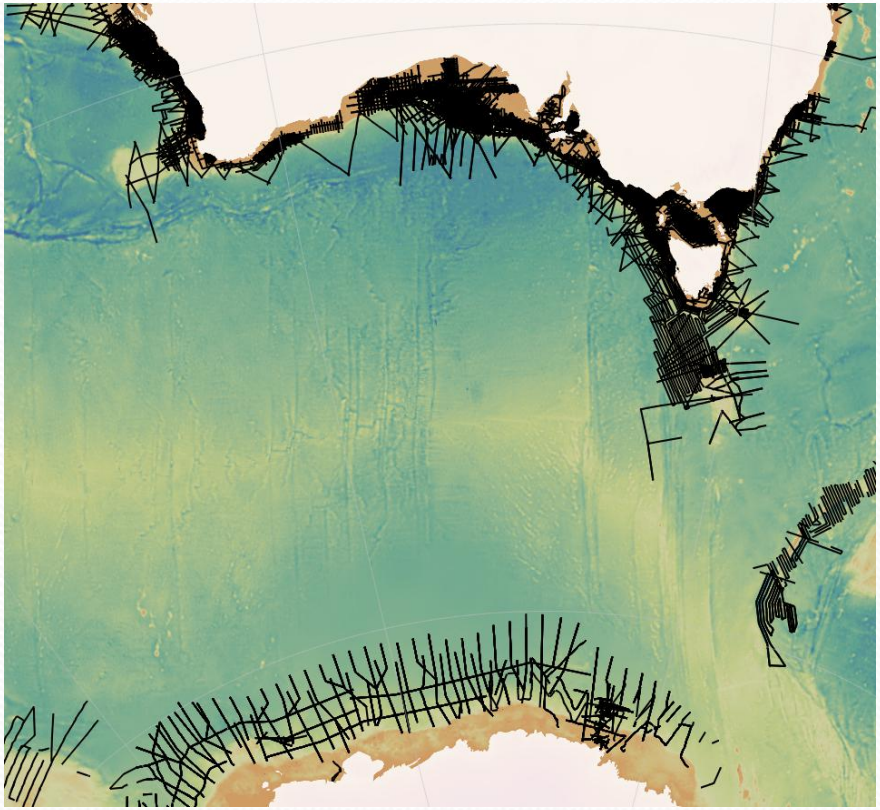
- Australian National University
- CSIRO
- Geoscience Australia
- GNS, New Zealand
- Latrobe University (prospective)
- Macquarie University
- Monash University
- Office of the Chief Scientist, Australia
- University of Auckland
- University of Melbourne
- University of New South Wales
- University of Otago
- University of Queensland
- University of Sydney
- University of Tasmania
- University of Western Australia
- University of Wollongong
- Victoria University Wellington


AFRICA
INDIAN OCEAN
AUSTRALIA
PACIFIC OCEAN
SOUTHERN OCEAN
ANTARCTICA
3.1
3.4
5.6
2.5
6.1
3.2
5.7
4.4
4.2
4.1
2.1
2.2
3.3
5.1
5.2
4.3
6.2
5.5
5.8
5.4
5.3
2.3
2.4
Topography
3500m
Sea level
-2000m
-5000m
-9000m
0
1000
2000
3000
4000 km
PP-312-3
Drill sites
IODP completed sites
IODP planned sites
ODP
DSDP
Large Igneous Provinces
Conjugate Margins and climate
Subduction
NZ region: Hikurangi subduction
Biosphere

Available seismic data

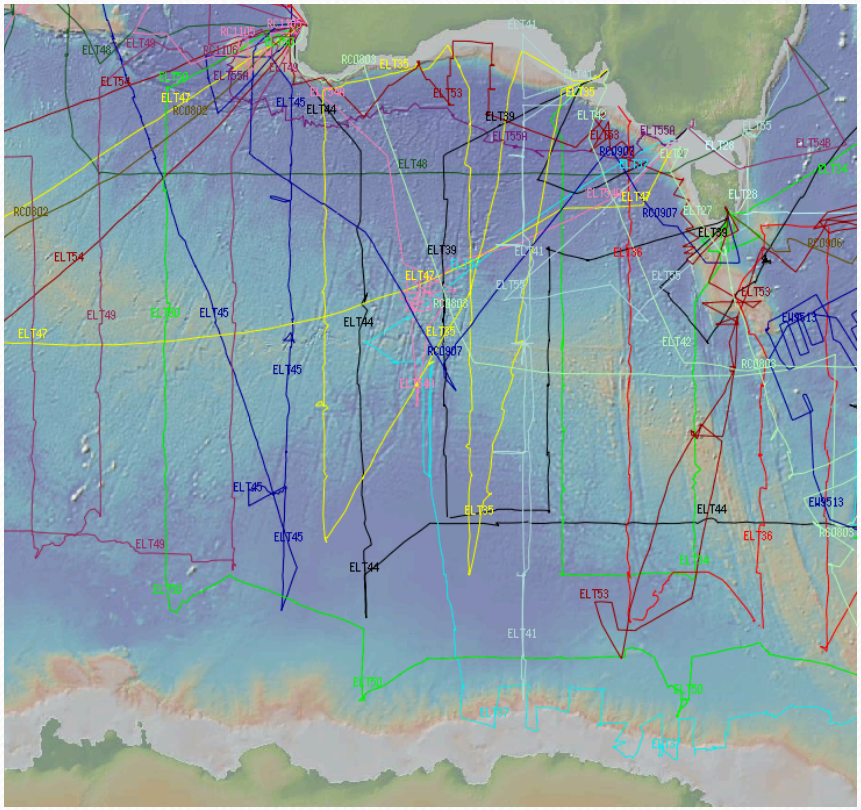
We emphasize that blue water research vessels with the necessary seismic reflection systems should continue to be available to researchers in all IODP member countries on reasonable fiscal conditions, and with suitable advance (national and international) planning mechanisms.

Multi-channel seismic data:



Single-channel seismic data:

http://www.marine-geo.org/ (06/2017)



- IODP NEEDS SEISMIC IMAGING!

Australian and New Zealand International Ocean Discovery Program Consortium

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IODP INTERNATIONAL OCEAN DISCOVERY PROGRAM

exploring the earth under the sea

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Australasian IODP Workshop, Consensus Statement

Following community discussions at the Australasian IODP Workshop, it was agreed that a consensus statement relating to the importance of site survey data and especially the availability of high quality seismic reflection profiles should be developed. The statement, below details the critical importance of this material in continued productivity and safety of sub-seafloor research.

This statement will be circulated internationally, to research vessel managers and stakeholders, on behalf of the Workshop team.

Consensus statement on need for site survey data for IODP

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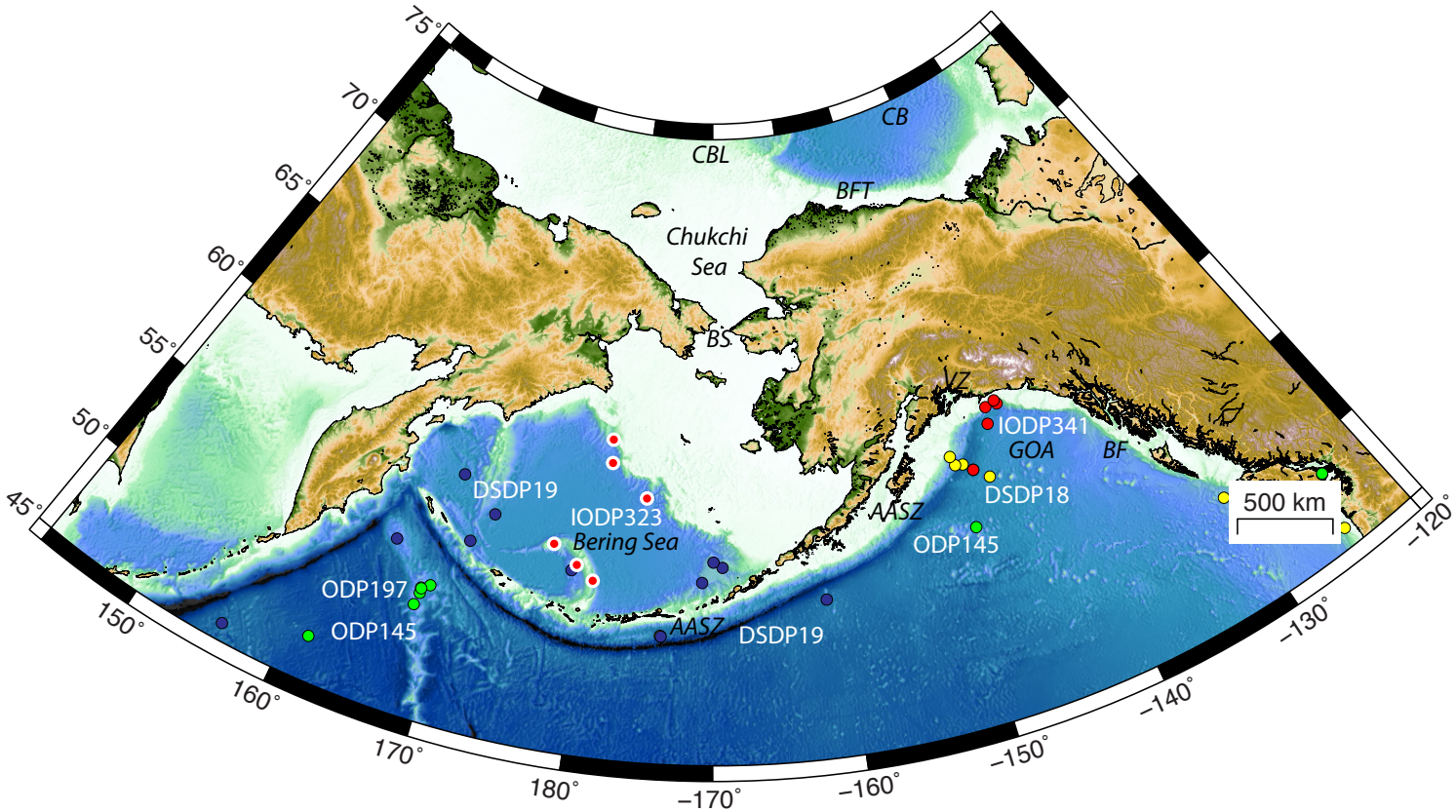
Scientific Exploration of the Arctic and North Pacific (SEA-NorP)
Proposed Regional Planning Workshop

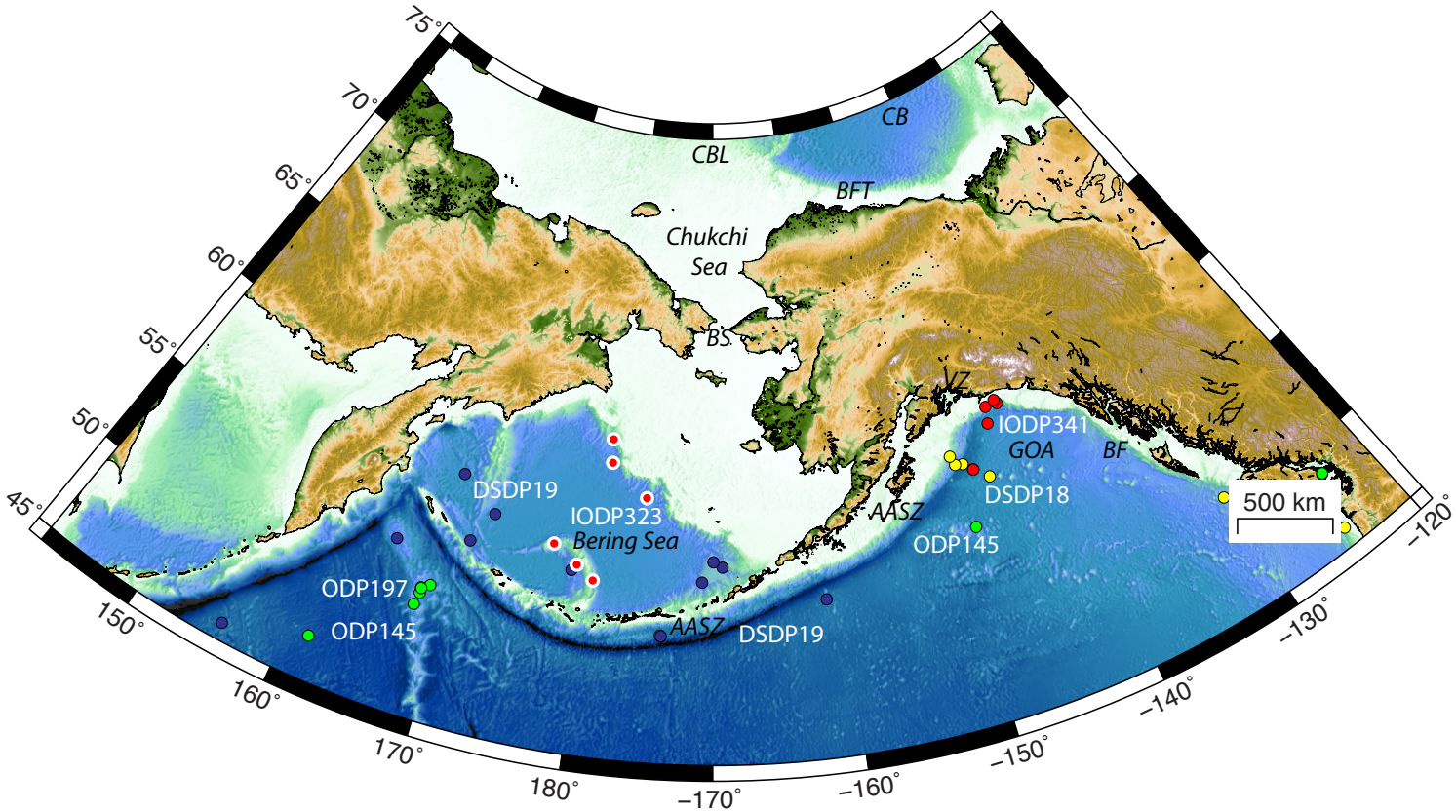
submitted Dec 1 2017



<u>Conveners</u>: Lindsay Worthington (University of New Mexico), Bernard Coakley (University of Alaska), Amy East (USGS), Matthias Forwick (University of Tromso), Juliane Mueller (Alfred Wegener Institute), Summer Praetoris (USGS), Kristen St. John (James Madison University)

Scientific Exploration of the Arctic and North Pacific (SEA-NorP)

GOALS: Draw together experts for regional planning across scientific themes, encourage new multidisciplinary collaborations and develop coordinated drilling strategies. Prioritize participation by early career and new to IODP investigators.



<u>Confirmed Science Steering Committee</u>: *Harold Tobin (tectonics/geophysics) (University of Wisconsin), Donna Shillington (geophysics/tectonics) (LDEO), Jess Larso (volcanology/geochemistry) (University of Alaska), Terry Plank (geochemistry) (LDEO), Alan Mix (paleoclimate) (Oregon State University)*

- CONCLUSIONS:
  - IODP fails without adequate imaging and lots of proposals in the system or planned which need survey work
  - There are many entry points for seismic data and expertise in the proposal system and excitement about a given proposal can still motivate site surveys
  - Many international options for seismic equipment and capable vessels for deployment, but transits are costly; R/V *Marcus Langseth* is 2x as capable as any other academic option globally
  - International community has many seismic experts and SEP is a place where such expertise meets 2x a year. Discussions at SEP show that there is significant interest in use of the *Langseth* when it is in the right place but somehow this has not led to funds.
  - Regional planning workshops are key areas to develop new drilling and seismic proposals as exemplified by Australasia workshop and if funded is expected at the SEA-NorP workshop.