Programmatic Balance in the Decadal Survey

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Programmatic Balance

- Programmatic balance takes two forms:
  - Balance across the solar system, assuring that the most important scientific objectives are met.
  - Balance in mission sizes (small, medium large).
- A program of only infrequent large missions would result in long stretches of relatively little new data being generated, leading to a stagnant community.
- A program of only small and medium missions would be incapable of addressing the most important scientific challenges.
- *NASA's suite of planetary missions for the decade 2013-2022 should consist of a balanced mix of Discovery, New Frontiers, and Flagship missions, enabling both a steady stream of new discoveries and the capability to address larger challenges like sample return missions and outer planet exploration.*

Research and Analysis Program

- *Increase the NASA planetary R&A budget by 5% above the total finally approved FY'11 expenditures in the first year, and then by 1.5% above inflation each successive year.*

Technology Development

- *A planetary exploration technology development program should be established, and carefully protected from incursions on its resources.*
- *This program should be funded at 6-8% of the total NASA Planetary Science Division budget.*

The Discovery Program

- *Continue the Discovery program at its current funding level, adjusted for inflation, with a cost cap per mission also adjusted for inflation (i.e., to $500 million FY'15).*

- *Assure a regular, predictable, and rapid (≤ 24-month) cadence of Discovery AOs and selections.*

- No recommendations are made for Discovery mission priorities; this is left to the AO and peer review process.

The New Frontiers Program

- *Change the New Frontiers cost cap to $1.0 billion FY'15, excluding launch vehicle costs.*
- *Select New Frontiers missions NF-4 and NF-5 in the decade 2013-2022.*

New Frontiers 4 and 5

- Select NF-4 from among:
  - Comet Surface Sample Return
  - Lunar South Pole-Aitken Basin Sample Return
  - Saturn Probe
  - Trojan Tour and Rendezvous
  - Venus In Situ Explorer
- Select NF-5 from among:
  - The remaining candidates from NF-4
  - Io Observer
  - Lunar Geophysical Network

Flagship Missions
(in priority order)

1. Begin Mars Sample Return campaign: *Descoped Mars Astrobiology Explorer-Cacher (MAX-C)*

2. Detailed investigation of a probable ocean in the outer solar system: *Descoped Jupiter Europa Orbiter (JEO)*

3. First in-depth exploration of an Ice Giant planet: *Uranus Orbiter and Probe*

4. Either *Enceladus Orbiter* or *Venus Climate Mission* (no relative priorities assigned)

Decision Rules: If Less Funding Is Available…

- Descope or delay Flagship missions.
- Slip New Frontiers and/or Discovery missions only if adjustments to Flagship missions cannot solve the problem.
- Place high priority on preserving R&A and technology development funding.

Summary

- Protecting R&A, technology, and the Discovery and New Frontiers programs remains high priority.
- The decadal priorities and decision rules were designed specifically for a situation like the current one, and can be applied accordingly.
- If the 2020 Mars rover mission will collect a returnable sample cache, it is broadly consistent with decadal recommendations, although with undesirable impacts on the rest of the program in the current budget climate.
- If the 2020 Mars rover mission will not collect a returnable sample cache, it is completely inconsistent with decadal recommendations.