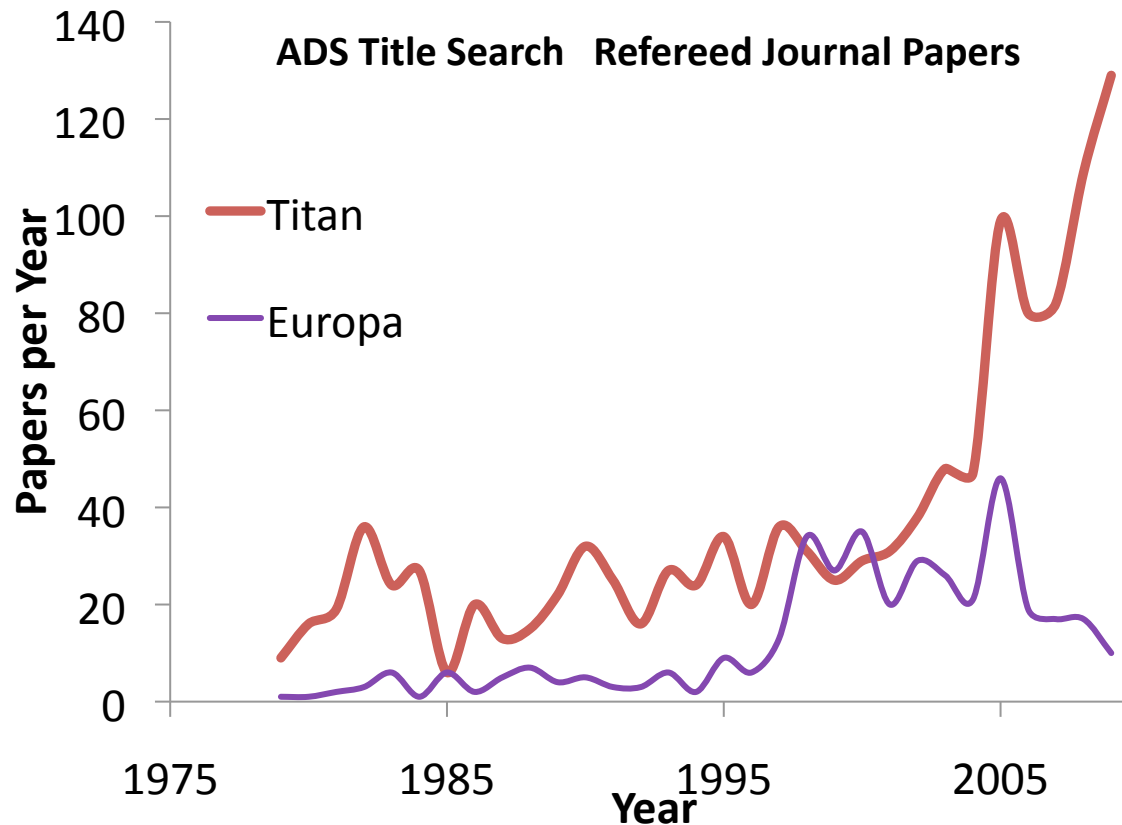


Titan Exploration Report to OPAG

February 8, 2010

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First the good news. Titan science is thriving...



Cassini Solstice mission was approved by NASA February 2010 for mission through 2017 (including 56 Titan flybys)

BUT - this is subject to spacecraft health and NASA Senior Review every 2 years. Note also that data losses due to lower DSN priority and ageing infrastructure are more likely than in the past (e.g. T60 lost last year).

February 2009 NASA/ESA announcement prioritized Europa/Jupiter mission for first outer planets flagship mission, with Titan/Enceladus to follow, as part of an Outer Planets **Program**.

Prioritization was based on mission concept maturity/readiness - NOT ON SCIENCE PRIORITIZATION. The need to pursue the same sustained study and technology development for Titan Flagship to bring it (and instrument/sampling concepts) to similar maturation in 5-10 years was noted. ***Enthusiasm for EJSM among the Titan community may depend on such.*** (*Efforts to broaden EJSM science are commended, but do nothing for those who study Titan organics, fluvial processes, aeolian research or Titan system science, etc.*).

Realistically, Titan Flagship will not arrive until 2030. A PI-led mission in the interim (Disco or NF) could sustain the Titan community post-Cassini and 'bite off' part of the Flagship science portfolio to make more affordable (e.g. fly key orbiter instrument, or in-situ element to scale Flagship down from 3 to 2 parts).

Discovery-12 solicitation allows use of ASRGs, opening possibility for worthwhile PI-led Titan missions to be proposed for the first time. Affordability of ASRG use, however, is a crucial factor in getting strong proposals. Concern on this point has been communicated to NASA - \$37M NEPA costs were not indicated in DSMCE studies.

Titan under NF depends on (1) being on target list (2) availability of Pu-238

EJSM announcement was accompanied by indications that NASA would pursue risk-reduction/technology development efforts for Montgolfiere balloon, in conjunction with CNES

NASA withdrew Montgolfiere support to pay for Decadal Survey mission studies.

Partly because Montgolfiere was assumed to be in work, Decadal Survey panel adopted a Lake Lander as the 'proof of concept' study to demonstrate potential affordability of a New Frontiers Titan mission.

(1. Lake Lander study overlaps with Titan Mare Explorer Discovery proposal presently being considered - key individuals not contributing to Decadal due to workload and proprietary data considerations [LESSON - DON'T OVERLAP PI-LED MISSIONS WITH DECADAL SURVEY!] . 2. Choice of Lake Lander was guided by expectation of obvious affordability/readiness for NF, does not imply lack of support for Montgolfiere science** nor for Titan in-situ technology development)

Because NASA withdrew its support (JPL has used some internal funds to continue work at a low level) CNES halved its efforts. CNES will cancel its efforts altogether in 2011 if NASA does not step up.

** this science could also be addressed by other concepts, e.g. Ames airplane AVIATR Discovery Proposal

Titan Through Time

A Workshop On Titan's Formation, Evolution and Fate

NASA Goddard
Space Flight Center,
Greenbelt, MD
April 6th-8th 2010

Themes:

**Titan's
Formation**

**Interior
Evolution**

Astrobiology

**Surface Activity
and Erosion**

Impact History



February 8th ~
Abstracts Due
February 15th ~
Registration Deadline
~ No Attendance Fee~

**Atmospheric Loss
and Evolution**

**Meteorology and
weather**

**Titan in the Saturn
System**

**The Fate of the
Atmosphere**

<http://titanworkshop.hostcell.net/>