

The TMT Science Advisory Committee (SAC): Activities & Prospects

Mark Dickinson (NOAO), SAC chair emeritus
TMT Science Forum
2016 May 24

TMT Science Advisory Committee

- ◆ 3 SAC representatives per TIO Member or Associate
 - ◇ +1 representative per partner from the TIO Governing Board
 - ◇ +1 representative from the University of Hawaii
 - ◇ One co-chair per Member/Associate
 - ◇ Current SAC chairperson: Charles Steidel (Caltech)
- ◆ 4 SAC meetings/year
 - ◇ Advise Project and Board on scientific matters related to the observatory design, instrumentation, operations, etc.
 - ◇ Serve as a forum for discussing the scientific interests and priorities of the TIO partnership astronomical communities

TMT SAC (& project friends), Pasadena, February 2016



SAC & Board members in Kyoto

- ◆ Caltech:
 - ◇ Chris Martin
- ◆ Canada:
 - ◇ Ray Carlberg*
 - ◇ Tim Davidge
- ◆ China:
 - ◇ Taotao Fang
 - ◇ Lei Hao
 - ◇ Greg Herczeg
 - ◇ Eric Peng
- ◆ India:
 - ◇ T. Sivarani
- ◆ Japan:
 - ◇ Masayuki Akiyama
 - ◇ Mitsuhiro Honda
 - ◇ Nobunari Kashikawa
 - ◇ Taro Matsuo
 - ◇ Tomonori Usuda*
 - ◇ Masanori Iye*
 - ◇ Toru Yamada*
- ◆ University of California:
 - ◇ Garth Illingworth
 - ◇ Lori Lubin
 - ◇ Tommaso Treu
- ◆ AURA:
 - ◇ Ian Dell'Antonio
 - ◇ Mark Dickinson
 - ◇ Caty Pilachowski*

*TIO Governing Board representative

Scientific planning and decisions

- ◆ SAC discusses scientific considerations affecting the design of the observatory, and works with the Project Office to plan development activities.
- ◆ Some current examples:
 - ◇ Planning & prioritization for second-generation TMT instrumentation
 - ◇ Scientific considerations of potential alternatives to the Maunakea TMT site

Future-generation capabilities

- ◆ Given the cost, complexity, and time-scales for producing TMT instruments, the TIO community must start prioritizing it's 2nd-generation instruments and AO systems now.
- ◆ The Kyoto Forum is the start of that process, gathering scientists from the whole TMT community to:
 - ◇ Review status of 1st-light instruments
 - ◇ Discuss concepts for future-generation capabilities
 - ◇ Debate priorities in many areas of astronomical research
- ◆ SAC will absorb input from the Forum and continue this discussion in its meetings this year.
 - ◇ Call for competitive instrumentation concept studies anticipated for early 2017

Fostering cooperation throughout the TIO partnership

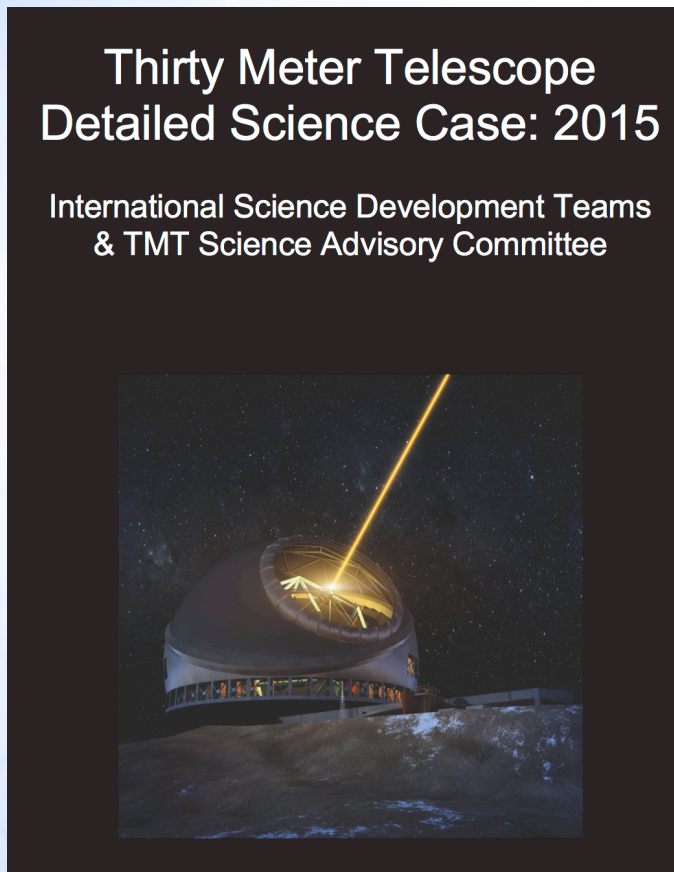
- ◆ TIO encompasses a vast and diverse international scientific community
- ◆ Cooperation and collaboration are key to the success of the observatory
- ◆ SAC established the International Science Development Teams (ISDTs) to foster that collaboration
 - ◇ 9 topical themes, from the Solar System to Cosmology
 - ◇ Annual call for members (currently 215 individuals)
 - ◇ Assist and advise the project on scientific topics
 - ◇ Plan for future TMT science programs

Recent TMT ISDT activities

2015 TMT Detailed Science Case

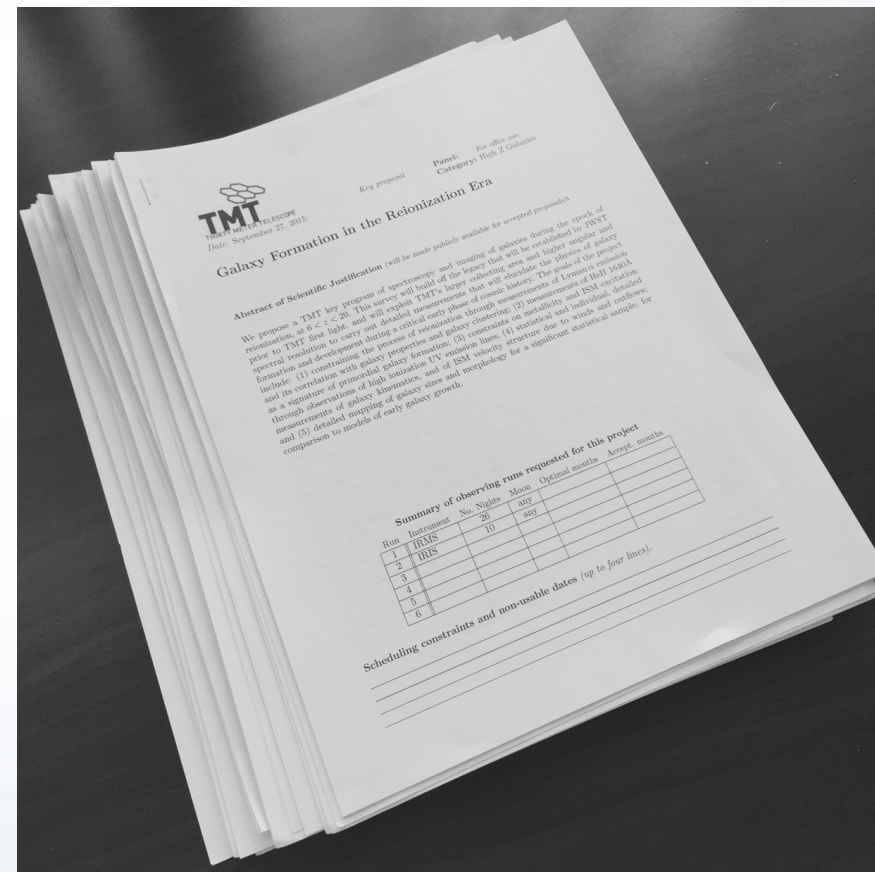
Newly updated, with contributions from 150+ scientists

(<http://arxiv.org/abs/1505.01195>)



TMT “Key Project” concept studies:

23 “proposals” requesting >1100 nights of observing time. New supplemental proposals submitted this month.



- ◆ The US national community has played an important role in TMT since its inception
 - ◇ US participation in a Giant Segmented Mirror Telescope was a top priority in the 2000 and 2010 US Decadal Surveys of Astronomy & Astrophysics, and was again recommended in a 2015 NRC report on the US OIR System
- ◆ However, the US is not now a member of TIO at a national level
- ◆ The US National Science Foundation (NSF) has a cooperative agreement with TMT to develop a model for potential US national partnership
 - ◇ Associated Universities for Research in Astronomy (AURA) is an Associate Member of TIO, with Board & SAC representation
 - ◇ NOAO leads US TMT liaison efforts, building a working relationship between US astronomers and TMT (e.g., through the ISDTs, TMT Forum, etc.)
 - ◇ US TMT Science Working Group recently delivered a draft US National TMT Participation Plan to NSF-AST.

US TMT Science Working Group

- NOAO established a US TMT SWG to engage with the US community and to understand its interests and aspirations for TMT
- SWG represents those interests to the TMT project, SAC, and Board
- SWG is helping to develop a *US National TMT Participation Plan* for the NSF

Bold: Here at the Kyoto TMT Forum

Ian Dell'Antonio* (Brown)

Mark Dickinson* (NOAO, chair)

Anthony Gonzalez (Florida)

Stephen Kane (SFSU)

Jamie Lloyd (Cornell)

Jennifer Lotz (STScI)

Lucas Macri (TAMU)

Karen Meech (Hawaii/IfA)*

Susan Neff (GSFC)

Deborah Padgett (GSFC)

Caty Pilachowski* (Indiana)

Kartik Sheth (NASA)

Lisa Storrie-Lombardi (IPAC)

* TMT Science Advisory Committee or Board representative

My message to you

- ◆ Big Astronomy is now international
- ◆ TIO is a new international consortium
 - ◇ We need to get to know one another and learn how to work together
- ◆ Cooperation and teamwork are essential to the success of TMT
 - ◇ Building the observatory
 - ◇ Operating the observatory
 - ◇ Accomplishing revolutionary science
- ◆ Go forth and collaborate!