

CELT Site Testing and Selection

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For the CELT Site Task Force (includes G. Chanan, **M. Schoeck**, W. Skidmore at UCI)

Effective collaboration with NOAO/AURA
(A. Walker et al.)

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- **Site selection is critically important**
 - Number of good nights and atmospheric quality determine the amount and the quality of the science done
 - The world's greatest (and most expensive?) telescope should be built at the best possible and practically viable site
 - **Site selection is in the critical path**
 - Transition from the design to construction phase
 - Implications for the design (e.g., AO, dome ...)
 - Implications for the operations/management model
 - **Site selection issues and problems:**
 - Atmospheric (seeing, transparency, AO issues, wind ...)
 - Logistical (ease and cost of construction and operation)
 - Political/sociological (availability, security, staffing, etc.)
 - Geological (earthquakes, volcanos)
- ... And there isn't enough time to do it right!
(but a reasonably informed decision can be achieved)

Overall Strategy

- Focus on 3 areas: **Mauna Kea, N. Chile, and W/SW U.S + N. Mexico**
 - Exclude Canarias (not better than MK), Namibia (not better than Chile), Antarctica, and other eclectic possibilities
- Start with **satellite data** studies of transparency and PWV, select short lists of sites
 - Subcontract to A. Erasmus
 - Baselines ~ 10 yrs, longer climatological context
- Conduct **seeing measurement campaigns** at selected sites (at least 12 mos./site)
- Supplement with **numerical modeling** studies
- **Collaborate** with NOAO, IfA, help from ESO

Proposed Plan: General Strategy

- **Chile Campaign:**
 - Short list of ~ 5 sites from the Erasmus study + ESO surveys
 - Parallel testing of 2 sites at a time (more by others?)
 - Test at least 3 new sites, min. 12 mos./site
 - Collaboration with NOAO, cost sharing
- **Mauna Kea Campaign:**
 - Always done through IfA/UH
 - Compare the N Shield and the Summit Ridge
 - Portable DIMMs/towers +?
- **Mexico (SPM):**
 - The best (and the only viable?) N. America site
 - Collaborate and cross-calibrate
- Numerical simulations and more satellite studies
- Site decision in ~ 3.5 years (minimum plan)
 - Longer time baseline would be better ...

Schedule, Budget and Cost Sharing

- Total site testing budget for ~ 3.5 yrs ~ \$₀₂ 3M
 - Consistent w. Greenbook estimates
 - Does *not* include some assumed contributions from NOAO (e.g., numerical sim's, senior personnel), or from IfA/UH (MK logistics, permits, senior personnel)
 - Does *not* allow for new ideas/directions
 - Initial CIT pre-Phase2 funding: \$ 525k
- Other groups and partnerships are essential
 - NOAO also partnering w. Cornell for testing at Chajnantor
 - OCIW testing on Las Campanas
 - Ongoing work at SPM in Mexico

We are all working on the same problem!

Progress so far:

- **Satellite studies (A. Erasmus), NOAA collab.**
 - Chile: done previously
 - North America: SPM the only viable choice?
 - MK/Chile/NA comparison: in progress
- **Equipment definition and acquisition**
 - Similar to the Greenbook plan
 - Equipment already arriving in Chile, more coming
- **Personnel**
 - M. Schoeck (UCI) engaged as a technical lead
 - W. Skidmore (postdoc) on board at UCI
- **Strengthening the collaboration with NOAA**
 - 1-site, 1-year testing in Chile MOU
 - Groundwork for a broader collaboration
- **Initial geology/seismology discussions**