

The life of an ALMA project

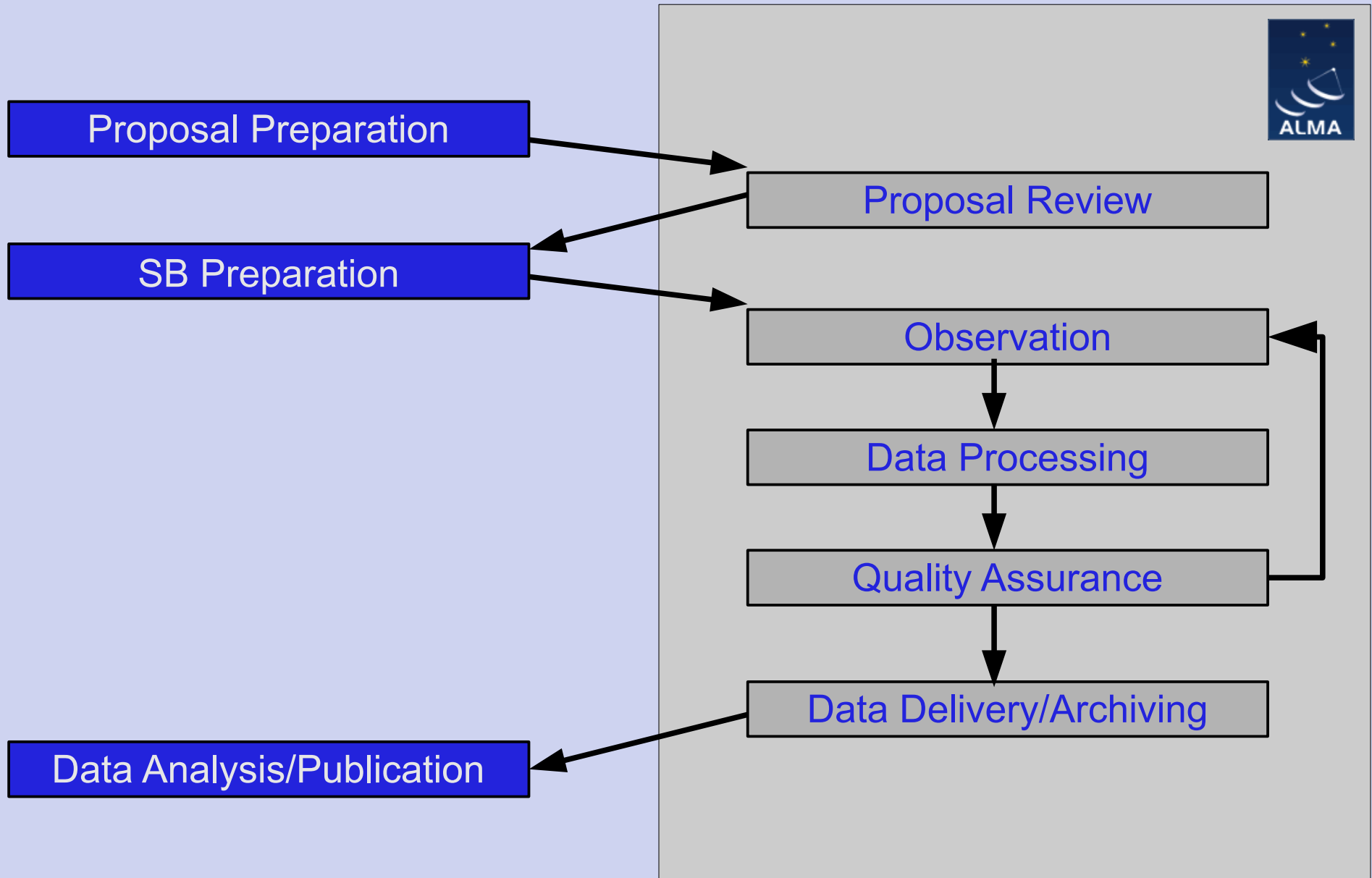
From a proposal to delivered data

Reinhold Schaaf

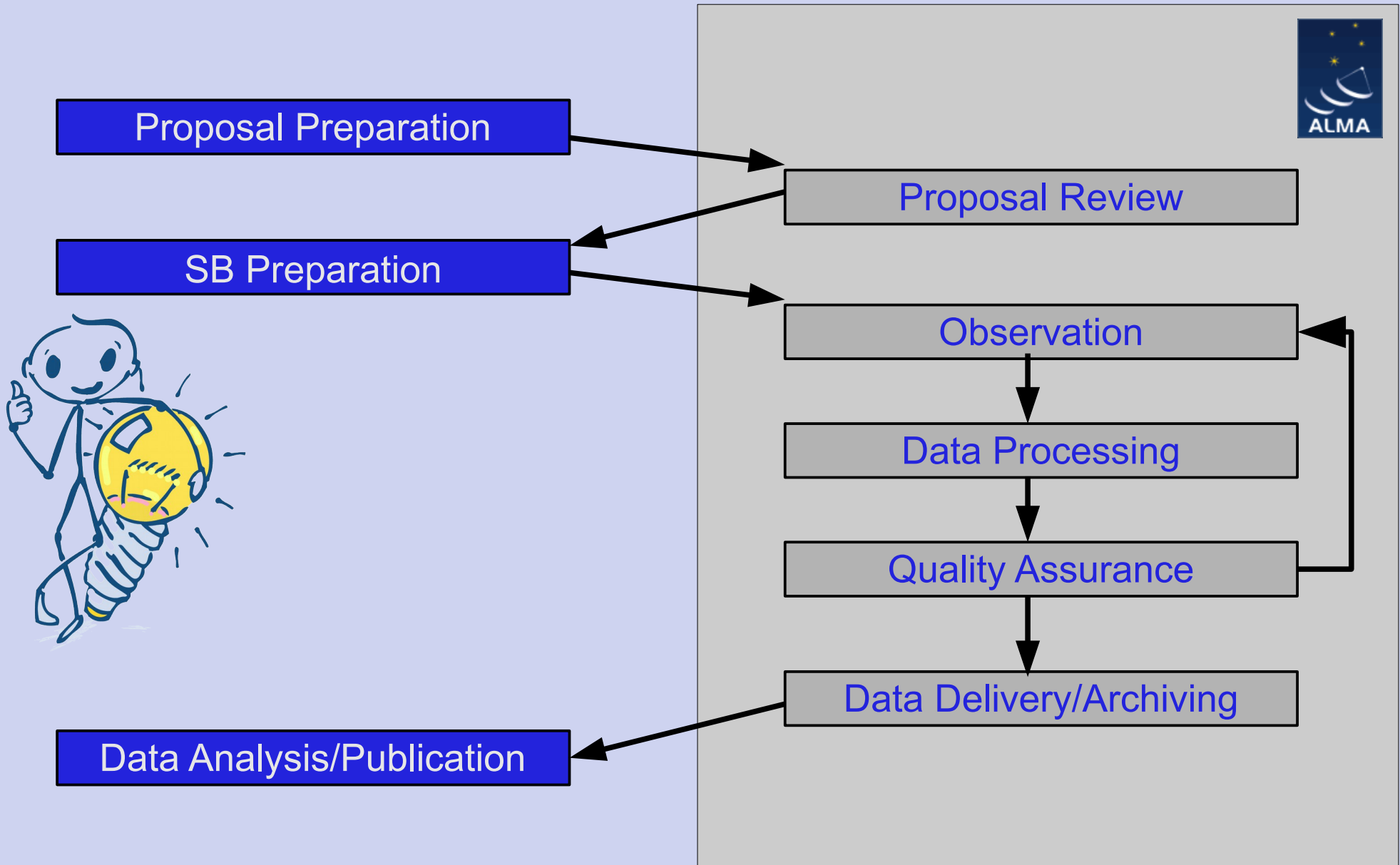
Argelander-Institut für Astronomie
der Universität Bonn

German ALMA Community Days 2015

The life of an ALMA project



Proposal Preparation



Proposal Preparation

- First stop: ALMA Science Portal
www.almascience.org/
 - Get ALMA Account (PI and all co-Is)
 - Get latest version of OT (Webstart version recommended)
 - Get Cycle 3 documentation
 - Proposer's Guide
 - Technical Handbook
 - OT documentation
 - ...

Proposal Preparation

Atacama Large Millimeter/submillimeter Array
In search of our Cosmic Origins

ESO NRAO NAOJ

Search Site

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You are here: [Home](#) > [Proposing](#) > Call for Proposals

Call for Proposals for Cycle 3

The ALMA Director, on behalf of the Joint ALMA Observatory (JAO) and the partner organizations in East Asia, Europe, and North America, is pleased to announce the ALMA Early Science Cycle 3 Call for Proposals (CfP) for scientific observations that will be scheduled from October 2015 to September 2016.

The ALMA Observatory includes an array of fifty 12-m antennas for long baseline interferometric observations (the 12-m Array), and the Atacama Compact Array (ACA, also known as the Morita Array) composed of twelve 7- m antennas for short baseline interferometric observations (7-m Array) and four 12-m antennas for single-dish observations (Total Power or TP Array).

Cycle 3 observations provide an exciting opportunity for science from this unique world-class facility. They include standard and non-standard modes (see below). ALMA has entered into a phase where investigator-driven science observations dominate activities while continued improvements and developments are also explored.

Cycle 3 Capabilities

The Cycle 3 capabilities are:

- At least thirty-six 12-m antennas in the main array, and ten 7-m antennas and two 12-m antennas (for single-dish maps) in the ACA.
- Receiver bands 3, 4, 6, 7, 8, 9, & 10 (wavelengths of about 3.1, 2.1, 1.3, 0.87, 0.74, 0.44, and 0.35 mm, respectively).
- Baselines up to 2 km for Bands 8, 9 and 10.
- Baselines up to 5 km for Band 7.
- Baselines up to 10 km for Bands 3, 4, & 6.
- Both single field interferometry and mosaics.
- Spectral-line observations with all Arrays and continuum observations with the 12-m Array and the 7-m Array. TP Array use is limited to spectral line observations in Bands 3 to 8.
- Polarization (on-axis, continuum in Band 3, 6 and 7, no spectral line, no ACA, no mosaics, no circular polarization).

Proposal Preparation

- OT allows
 - Preparation & validation of proposal
 - Local storage of proposals
 - Submission and multiple re-submissions until deadline

23 April 2015, 15:00 UT

- Only PI can submit
 - Collaboration by sharing locally stored proposals

Proposal Preparation

- ALMA highly over-subscribed, so proposals must be strong
 - Science case
 - Technical justification
 - Possibly simulations
- Support:
 - OT documentation
 - Knowledge base
 - ALMA Helpdesk
 - ARC nodes

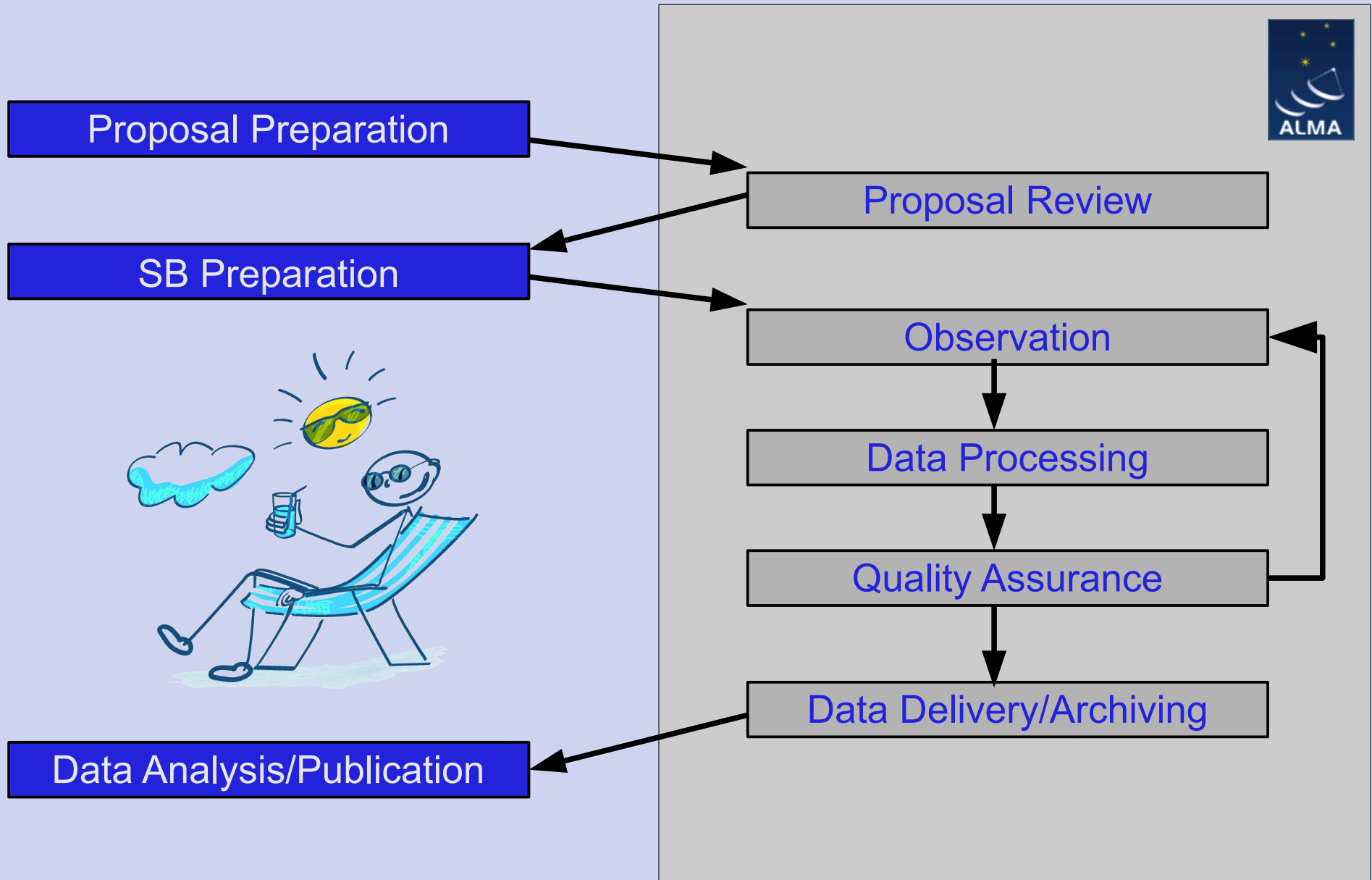
Proposal Preparation

The screenshot displays the ALMA Science Portal website. At the top left is the ALMA logo with the text "Atacama Large Millimeter/submillimeter Array" and "In search of our Cosmic Origins". To the right is the ESO logo. A search bar is located in the top right corner. Below the header is a navigation bar with links for "ESO", "NRAO", and "NAOJ", along with "Log in", "Register", "Reset Password", and "Forgot Account".

The main content area is divided into several sections:

- Left Navigation Menu:** Includes "About", "Science", "Proposing", "Observing", "Data", "Documents & Tools", and "Knowledgebase/FAQ". Below this is a section titled "User Services at ARCs" with a list: "Helpdesk", "ALMA Calendars", "EU ARC", "NA ARC", and "EA ARC".
- Breadcrumbs:** "You are here: Home".
- Header Section:** "Welcome to the Science Portal at ESO" with a large image of the ALMA observatory and a galaxy. Below the image is the text "Atacama Large Millimeter/submillimeter Array".
- Main Content:** "Cycle 3 Call for Proposals" with a red announcement: "The Cycle 3 Call for Proposals is now open for scientific observations that will be scheduled from October 2015 to September 2016. The proposal submission deadline is 15:00 UT on April 23, 2015." This is followed by a paragraph explaining the portal's purpose and a paragraph about "User Services at the ARCs".
- Right Side:** "General News" section with three items: "ALMA Cycle 3 Call for Proposals is now open" (Mar 24, 2015), "Resubmission of unfinished Cycle 1 and 2 proposals for the Cycle 3 proposal review" (Mar 24, 2015), and "Release of Science Verification data from the ALMA Long Baseline Campaign" (Feb 17, 2015). Below this is "Announcement of intent to release a new installment of Science Verification data" (Feb 02, 2015). Further down is "ALMA Cycle 3 Pre-announcement" (Dec 08, 2014) and "More...". At the bottom right is "Local News" with "2015 Call for 5 PhD Fellowships" (Mar 02, 2015) and "One or two postdoctoral".

Proposal Review



Proposal Review

- Every proposal will be assessed
 - Scientifically (at least one review panel per science category)
 - Technically by ALMA experts
- PI will receive notification (Aug 2015)
 - Overall ranking
 - Priority flag
 - Report on scientific strengths and weaknesses
 - Report on technical feasibility

Proposal Review

- Priority flags:
 - A: Highest priority, carried over to Cycle 4 if not completed in Cycle 3
 - B: Highest priority, not carried over to Cycle 4
 - C: Filler project, executed if conditions allow no higher priority project
 - All other flags: Project will not be observed

Proposal Review

- For A and B projects, the following will be made public immediately:
 - Project code
 - Proposal title and abstract
 - Name and region of PI
 - Names of co-Is
- For C projects this data is made public as soon as first data are taken

Proposal Review

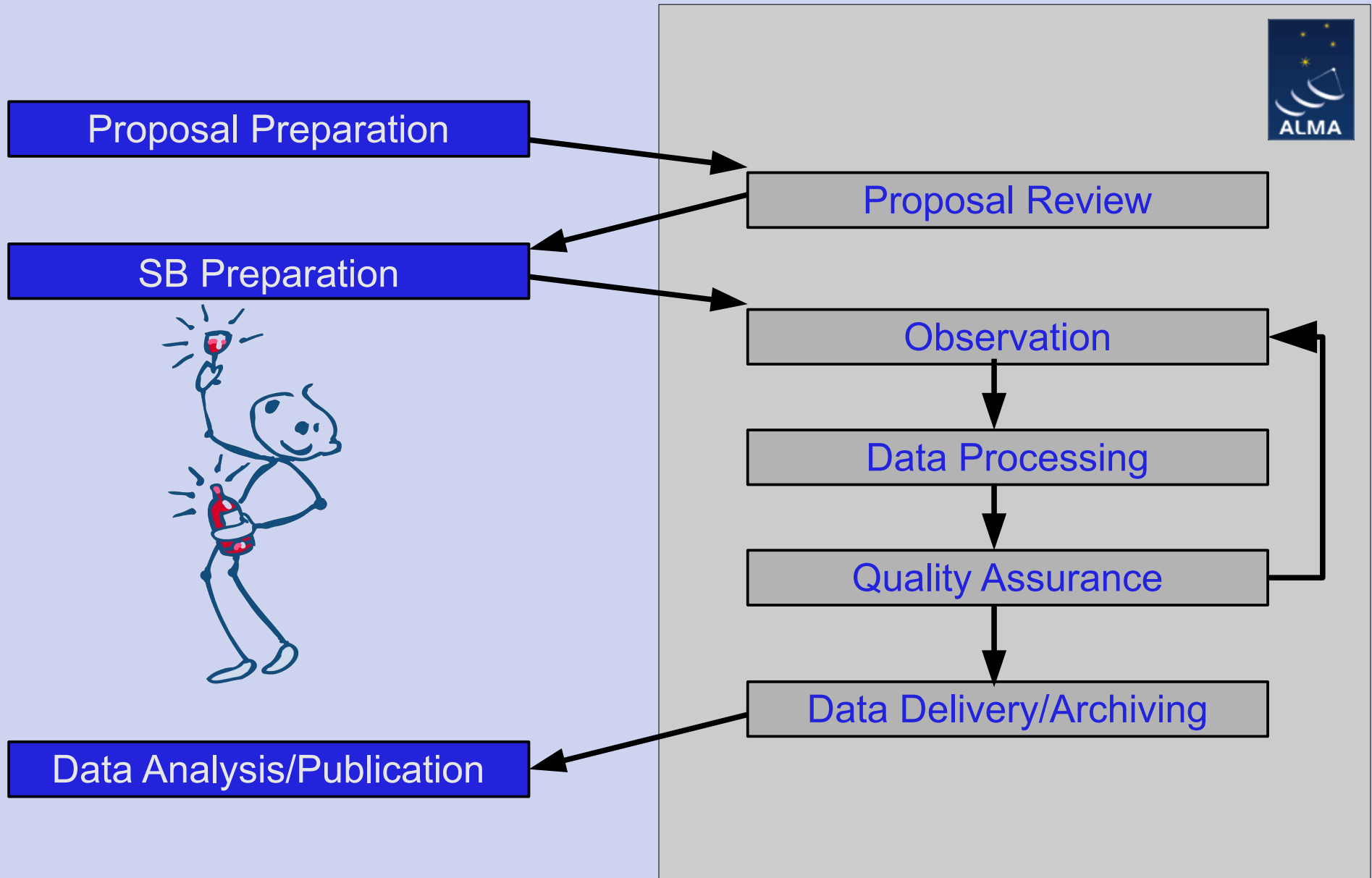
- Regional shares:
 - Europe: 33.75%
 - North America: 33.75%
 - East Asia: 22.5%
 - Chile: 10%
 - Open Sky: up to 5%

Proposal Review

- Policies for
 - Duplications
 - De-scoping
 - Non-standard observing modes (up to 25% of total observing time)
 - Science Goals that include ACA observations

see documents “Proposer's Guide” and “ALMA Users' Policies”

SB Preparation



SB Preparation

- Scheduling Blocks (SBs) are smallest observable units
- SB Preparation (aka Phase 2): Make proposal actually executable
- Several weeks before project is scheduled for observation
- ALMA will inform PIs when SB preparation for their project is due

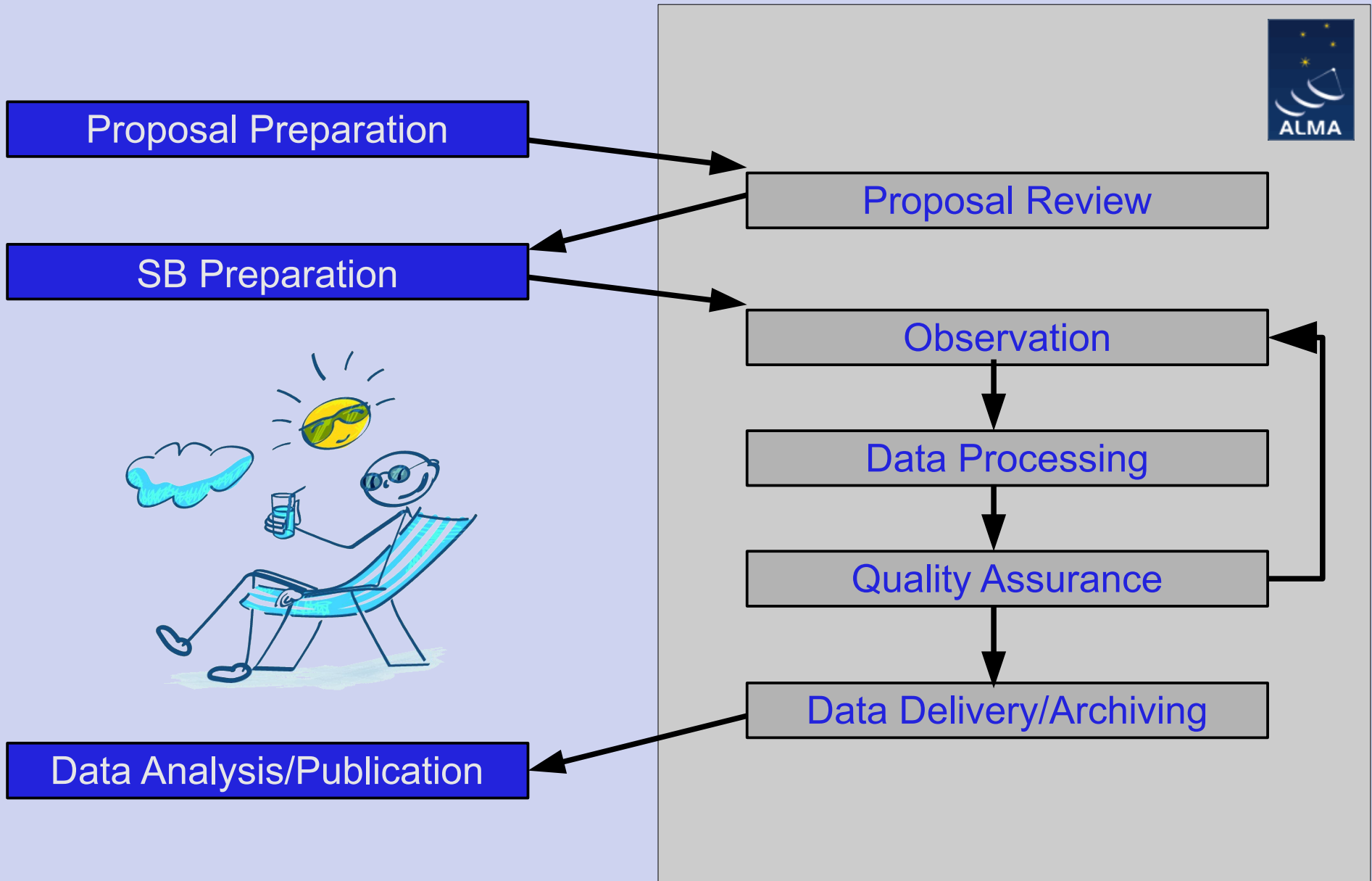
SB Preparation

- ALMA
 - Makes initial SB setup
 - Assigns a Contact Scientist (CS) at an ARC node
 - Opens a helpdesk ticket for communication between PI and CS
- SBs can be viewed/edited with OT
 - PI inspects SBs and iterates them with CS through helpdesk
 - PI approves SBs formally in helpdesk for execution

SB Preparation

- Minor changes are possible, e.g.
 - Change in target position no more than half a primary beam width
 - Change in target frequency no more than 20% of width of original spectral window
 - Change of velocity reference frame
- All other changes require formal change request and are strongly discouraged

Observation



Observation

- Observations require no interaction with PI
- Individual SBs are executed repeatedly until scientific goals as defined in proposal are achieved
 - Actual observation times may differ from time estimates in proposal
- Quality Assurance (QA0 and QA1) is performed during observations

Observation

- Project Tracker gives PI status of project
 - Overall execution status
 - Detailed reports down to individual executions of SBs
- ALMA Status page gives information about
 - Current status of weather, array etc
 - Observing reports of finished observation blocks
 - Observing and configuration schedule for remaining part of cycle

Observation



Atacama Large Millimeter/submillimeter Array
In search of our Cosmic Origins



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About

Science

Proposing

Observing

ToO activation

Phase 2

Project Tracker

ALMA Status Page

High Priority Projects

Data

Documents & Tools

Knowledgebase/FAQ

User Services at ARCs

- Helpdesk
- ALMA Calendars
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- EA ARC

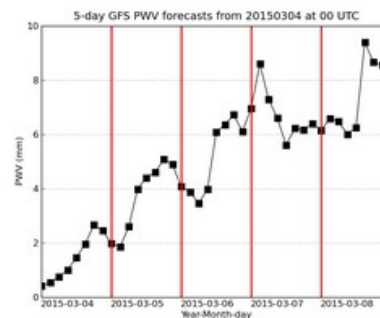
You are here: Home > Observing > ALMA Status Page

ALMA Status Page

Weather

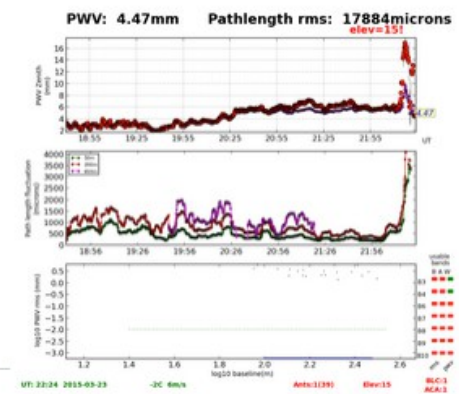
Current Data	
Radiometer [mm] :	Shutter Closed
Temperature [C] :	-5.54
Dewpoint [C] :	-5.5
Humidity [%] :	95.09
Pressure [hPa] :	553.29
Wind Speed [m/s] :	8.95
Wind Direction[deg] :	318.0
Wind Chill [C] :	-18.48
Last update :	Wed Mar 25 10:56:00 2015

[APEX Weather Monitor](#)



[Chajnantor PWV Forecast](#)

[Link to ALMA Publications List](#)

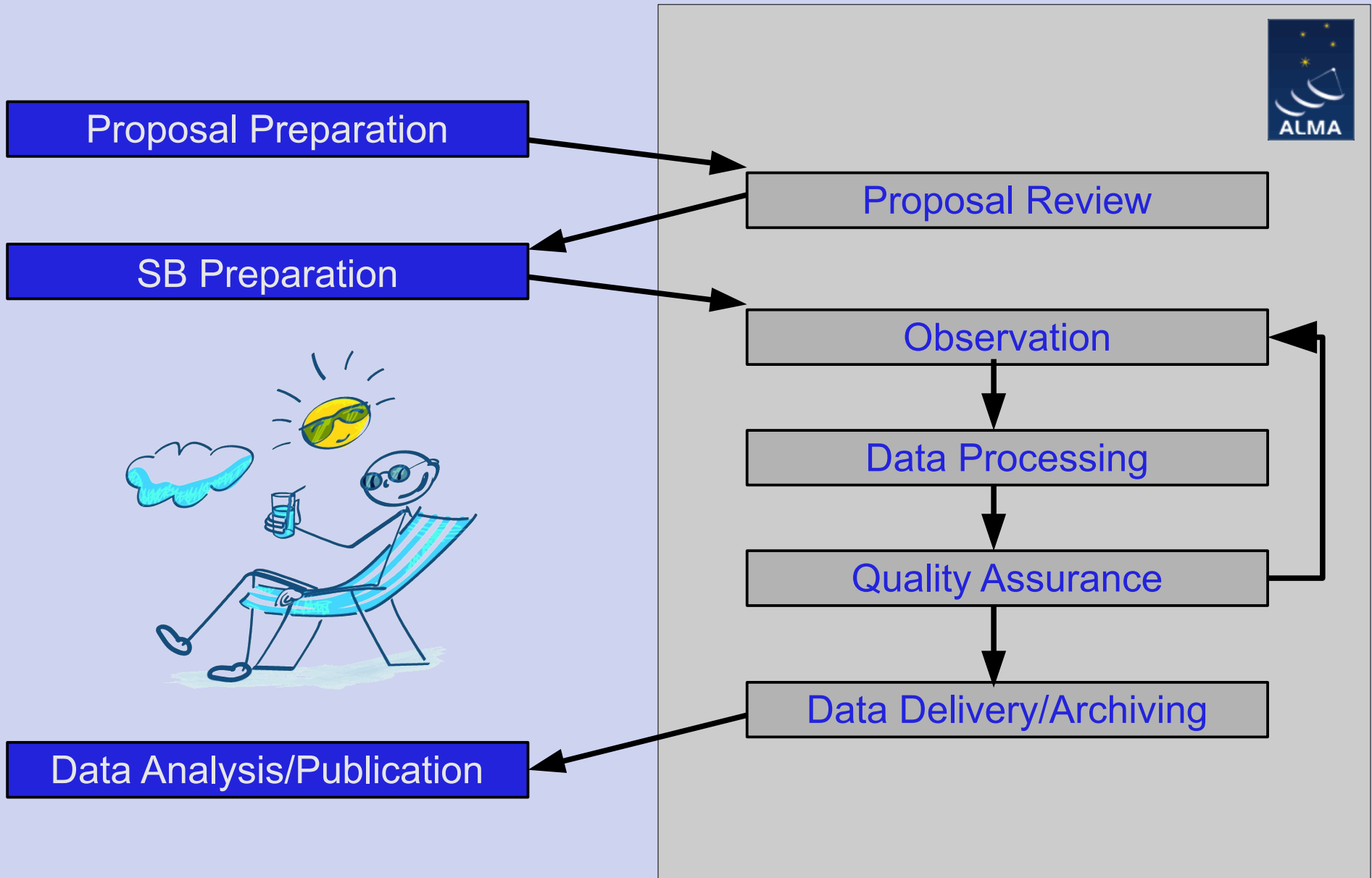


[Current ALMA PWV & phase stability](#)

Most Recent ES Configuration (March 23, 2015)

Array 7m 12m

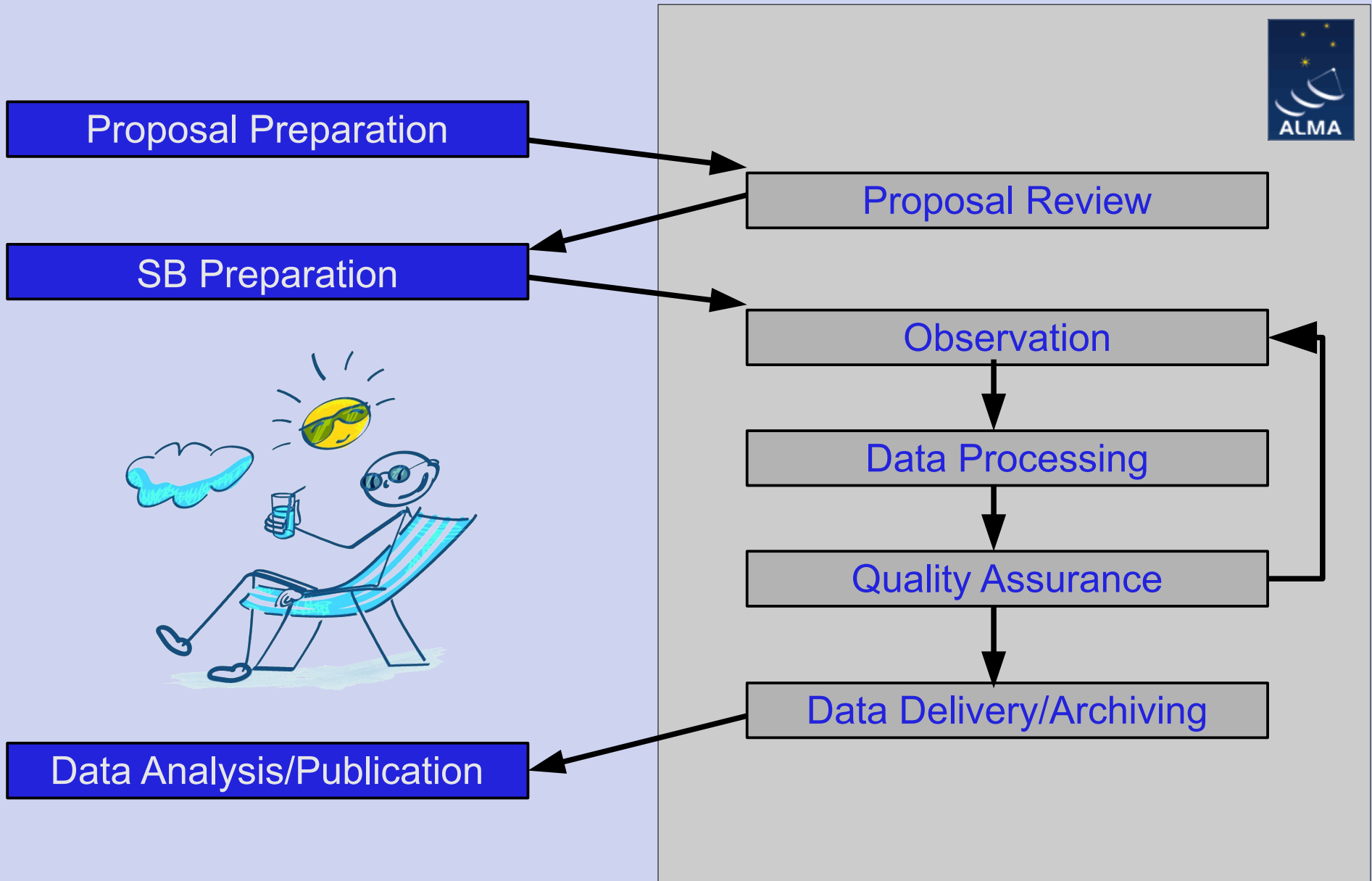
Data Processing



Data Processing

- Performed by ALMA with CASA
 - Standard modes: Pipeline
 - Non-standard modes: manual
 - On a Science Goal level
- Involves calibration, flagging, imaging
- Quality Assurance (QA2) performed

Quality Assurance



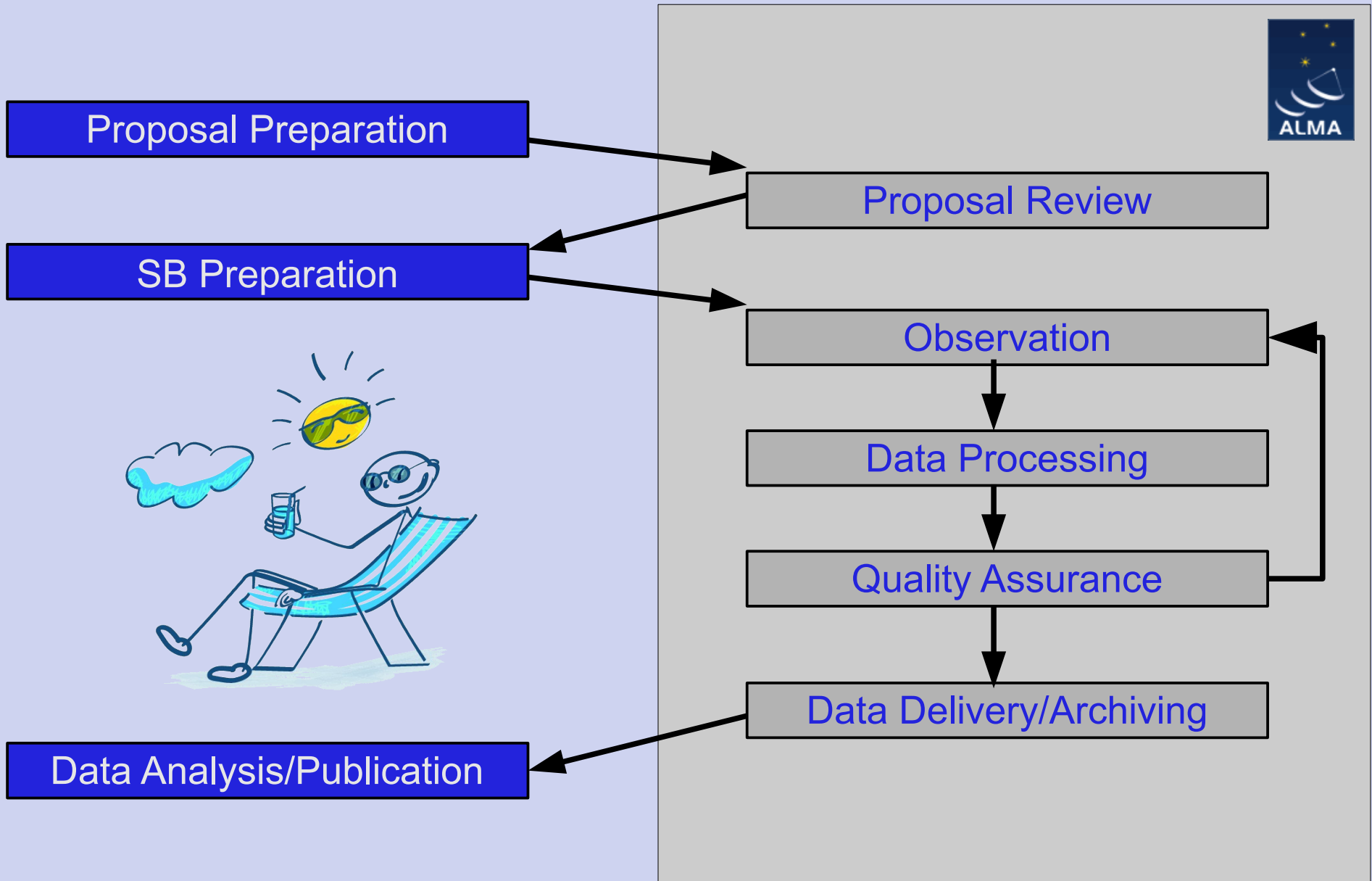
Quality Assurance

- Goal: “Deliver to the PI a reliable final data product that has reached the desired control parameters outlined in the science goals, that is calibrated to the desired accuracy and free of calibration and imaging artifacts”

Quality Assurance

- QA0 and QA1 during data taking
- QA2 during data processing
 - Failure to meet pass criteria leads automatically to re-observation of affected SBs
- QA3 after data delivery
 - Feedback from PI through helpdesk

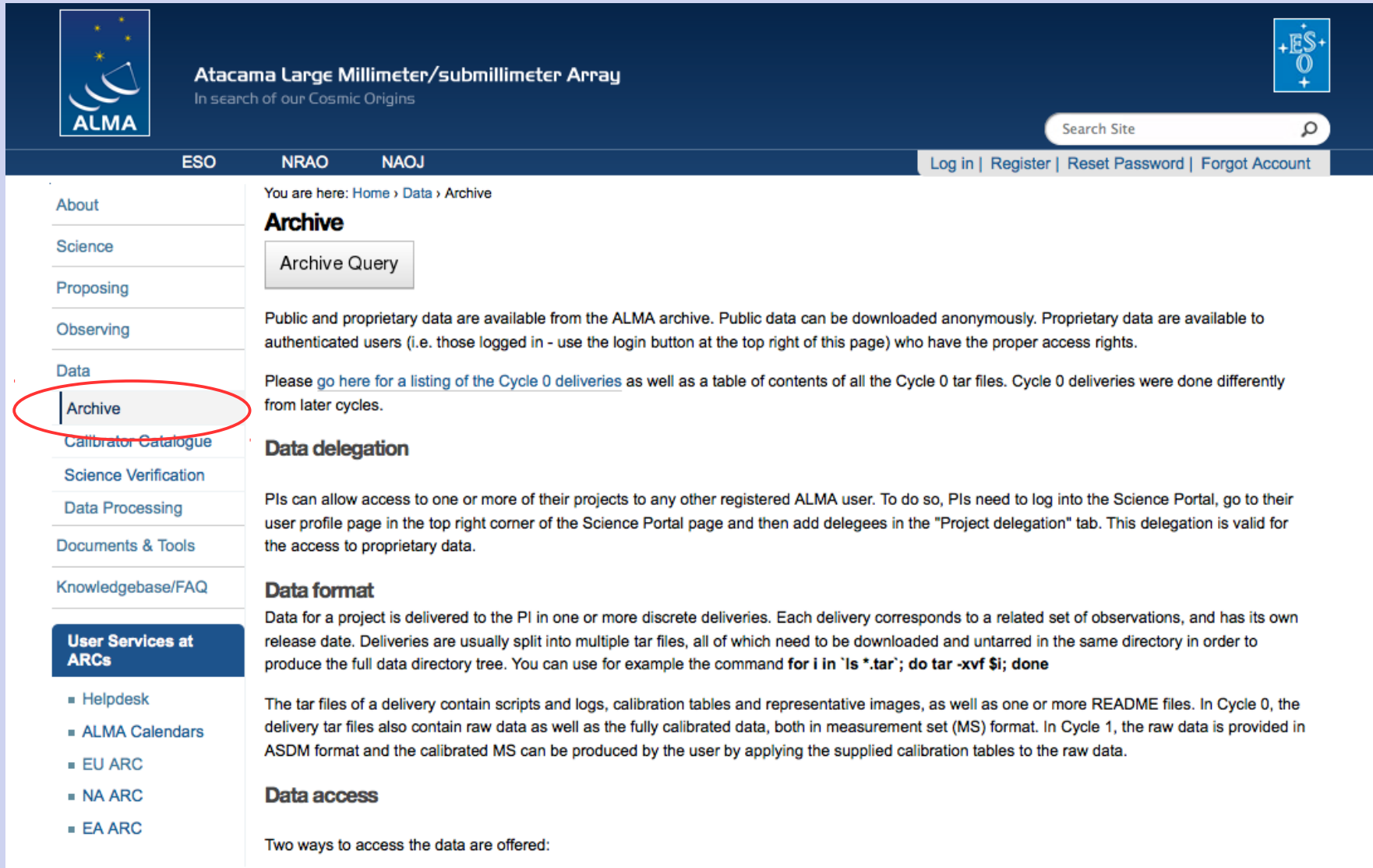
Data Delivery/Archiving





Data Delivery/Archiving

- All data that passes QA2 ingested into ALMA Archive
 - Located in Santiago
 - Mirrors at each ARC
 - European mirror at ESO Garching
- PI informed via helpdesk that data is available for download
 - Shipping of disks in special cases

Data Delivery/Archiving



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User Services at ARCs

- Helpdesk
- ALMA Calendars
- EU ARC
- NA ARC
- EA ARC

You are here: [Home](#) > [Data](#) > [Archive](#)

Archive

Public and proprietary data are available from the ALMA archive. Public data can be downloaded anonymously. Proprietary data are available to authenticated users (i.e. those logged in - use the login button at the top right of this page) who have the proper access rights.

Please [go here for a listing of the Cycle 0 deliveries](#) as well as a table of contents of all the Cycle 0 tar files. Cycle 0 deliveries were done differently from later cycles.

Data delegation

PIs can allow access to one or more of their projects to any other registered ALMA user. To do so, PIs need to log into the Science Portal, go to their user profile page in the top right corner of the Science Portal page and then add delegates in the "Project delegation" tab. This delegation is valid for the access to proprietary data.

Data format

Data for a project is delivered to the PI in one or more discrete deliveries. Each delivery corresponds to a related set of observations, and has its own release date. Deliveries are usually split into multiple tar files, all of which need to be downloaded and untarred in the same directory in order to produce the full data directory tree. You can use for example the command `for i in `ls *.tar`; do tar -xvf $i; done`

The tar files of a delivery contain scripts and logs, calibration tables and representative images, as well as one or more README files. In Cycle 0, the delivery tar files also contain raw data as well as the fully calibrated data, both in measurement set (MS) format. In Cycle 1, the raw data is provided in ASDM format and the calibrated MS can be produced by the user by applying the supplied calibration tables to the raw data.

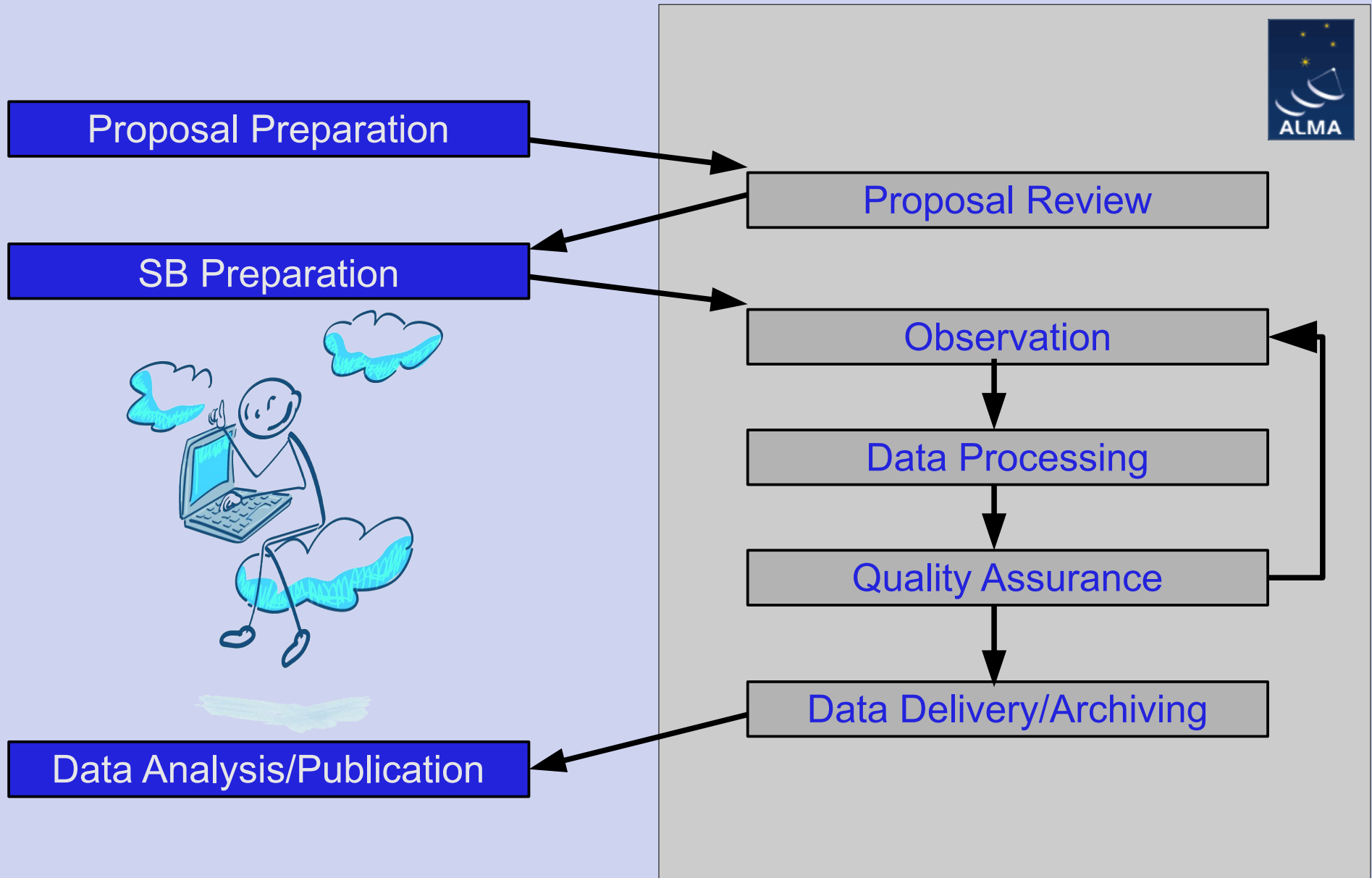
Data access

Two ways to access the data are offered:

Data Delivery/Archiving

- Data package includes
 - Raw Data
 - Calibration & imaging products
 - Fits images & cubes
 - QA2 report
 - Data processing script
 - Processing log files
- Proprietary period 12 months
 - Clock starts when data available for download

From Proposal to Delivered Data



Data Analysis/Publication

- CASA
- You are not on your own! Your ARC node provides help
 - Expert advice for data analysis questions
 - Face-to-face support on request through ALMA helpdesk

Data Analysis/Publication

