



The proposal submission cycle: policies and procedures

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Herschel as an observatory



- Herschel will be operated as an **observatory-type** facility (like ISO)
- Designed to provide routine astronomical observations for a period of **at least 3 years** after the initial mission phases
- Available to the entire astronomical community: roughly **2/3 of the observing time** will be 'Open Time'
- Through a standard competitive proposal procedure
- To some extent Herschel will be **its own pathfinder** – quick reaction times needed
- **Observing strategy** must be adapted to take this into account (Herschel will be breaking new ground!)

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Distribution of observing time



- Total available observing time in 3 years is: *19,776 hours*
= schedulable science time (21 hours/day x 365 days x 3)
– 14% (~ 1 day/week) for calibration / engineering observations
- Herschel observing time divided into *Guaranteed Time (GT)* and *Open Time (OT)*
- 32% (1/3) is for GT (*6,328 hours*)
- 68% (2/3) is for OT (*13,448 hours*) – a maximum of 4% of it can be allocated as Discretionary Time

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Distribution of Guaranteed Time



- Principal Investigator (PI) consortia: each own 30% of the GT (*1,898 hours each*)
- The Herschel Science Centre (HSC) owns 7% of the GT (*443 hours*)
- Mission Scientists (MSs) own 0.6% of the GT (*38 hours each*)
- The Herschel Optical System Scientist (HOSS) owns another *38 hours*
- PIs were required to spend a minimum of *50% of their GT* on '*Key Programmes*' (KPs)
- *~40% of OT* suggested to be spent on *OT KPs*

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Initial Herschel AO



- Initial Herschel Announcement of Opportunity is the *Call for observing time for Key Programmes*
- Both for *Guaranteed Time (GT)* and *Open Time (OT)* Key Programmes, but divided into two parts
- In the *first round* Key Programmes (KPs) for the GT holders were solicited
- After closing the call for the GT holders, a *scientific and technical evaluation* of the proposed observations was conducted, and a *list of reserved observations* was generated and published
- In a *second round*, the solicitation of OT KP observing proposals has started, open for all members of the astronomical community

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AO schedule

- 1 February 2007: AO for Key Programmes
- 5 April 2007: **Submission deadline for GT KPs**
(June 2007: Phase 2 data entry)
- 5 July 2007: Announcement of GT KP proposals and Reserved Observations
- 25 October 2007: **Submission deadline for OT KPs**
(January-February 2008: Phase 2 data entry)
- 28 February 2008: Announcement of accepted OT KP proposals and observations

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GT KP Statistics. I



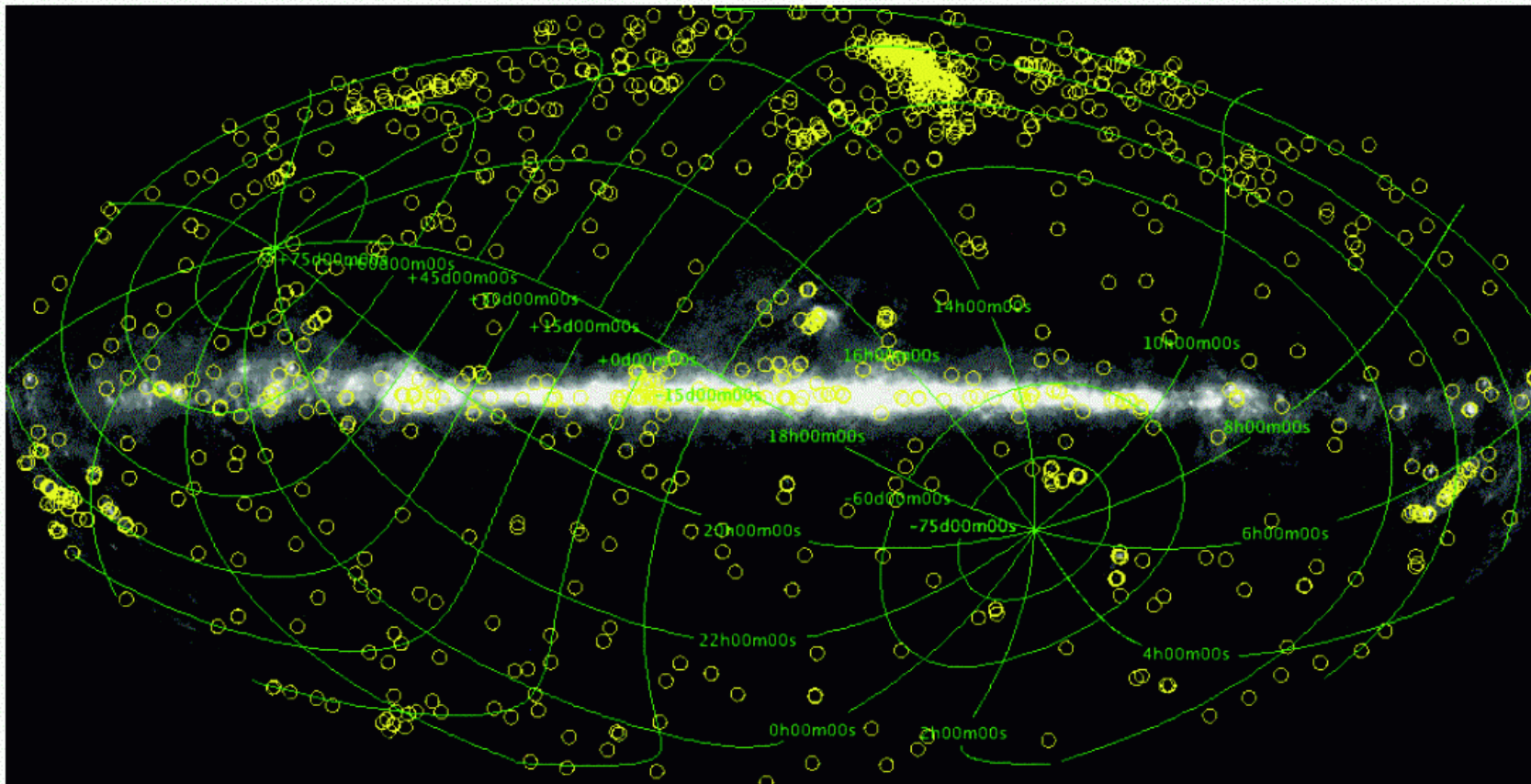
- 21 GT KP proposals were accepted; list available in the HSC web page with links to abstracts and dedicated web pages, when available
- A total of 6668 AORS covering 5814 hours of Herschel observing time, covering a wide range of science topics from Solar System to Cosmology
- More than 90% of the nominal observing time available for GT holders has already been distributed

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GT KP Statistics. II



- Distribution of approved AORs in the sky:



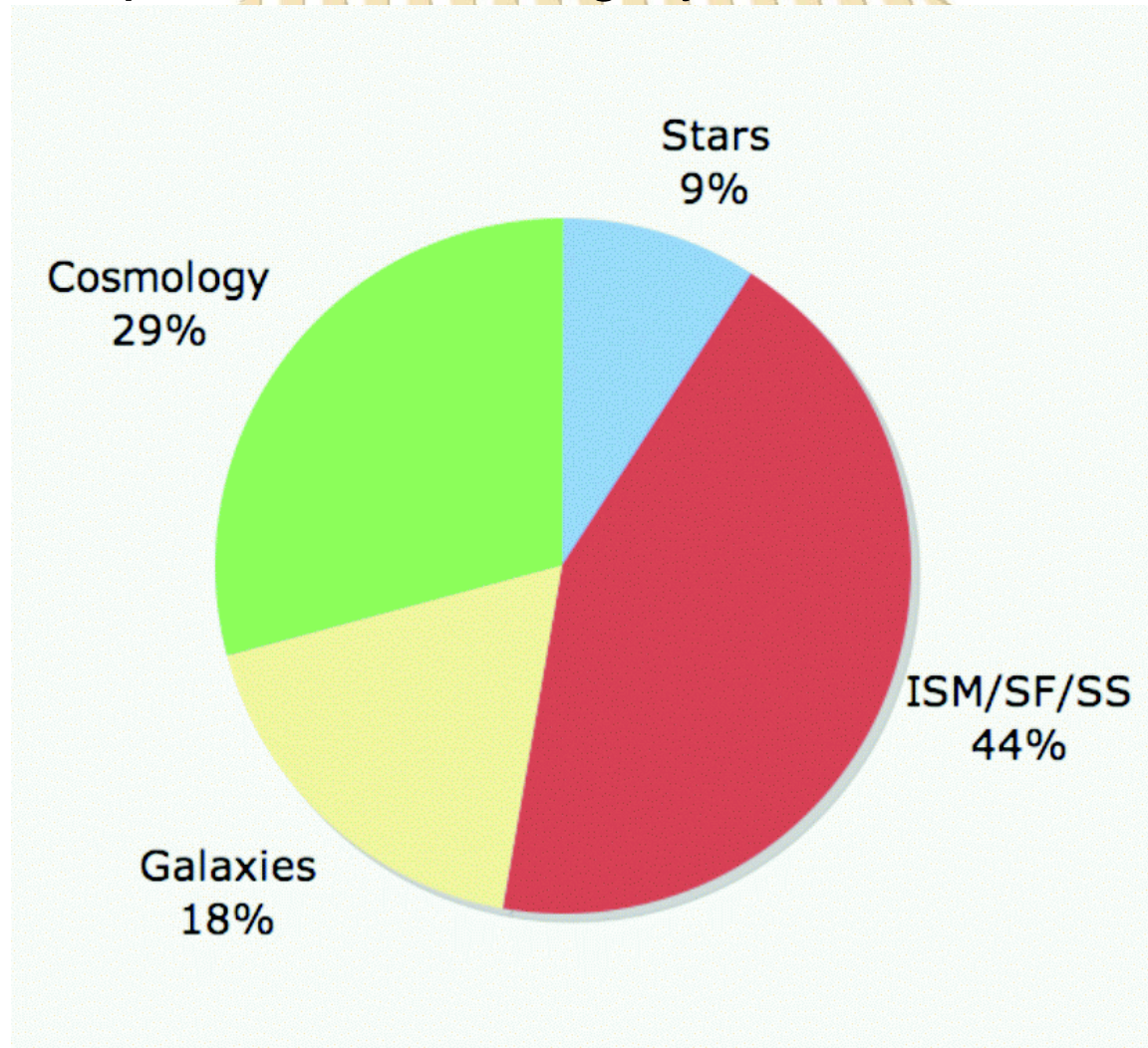
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Image: David Shupe (NHSC)

GT KP Statistics. III



- Distribution per science category



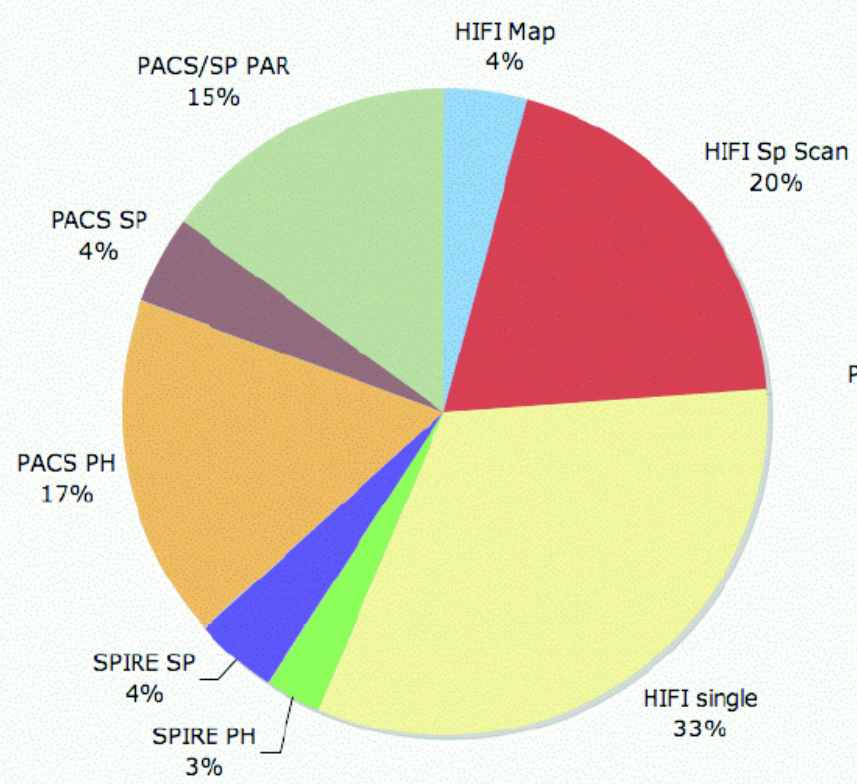
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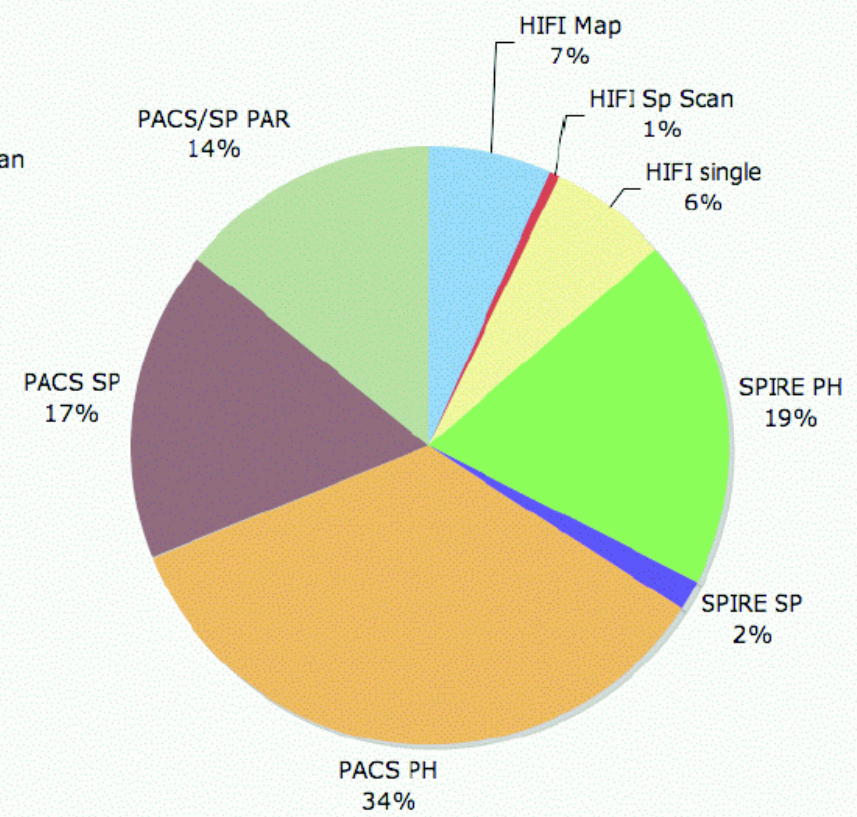
GT KP Statistics. IV

- Distribution per AOT usage:

GALACTIC BREAKDOWN WITH INSTRUMENT



EXTRAGALACTIC BREAKDOWN WITH INSTRUMENT



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The KP concept (I)

- A mechanism to ensure that ‘unusually’ **large, homogeneous, ‘survey-type’ programmes** can be proposed, selected and scheduled early enough during the mission to **allow follow-up studies with Herschel** before the end of the mission
- To be defined as a **KP** an observing program must:
 - *Exploit the unique capabilities of Herschel to address (an) important scientific issue(s) in a comprehensive manner*
 - *Require a large amount of observing time (> 100 h) to be used in a uniform and coherent fashion*
 - *Produce a resulting well characterised dataset of high archival value*

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The KP concept (II)



- It also involves some **commitments**... (these should be a key criterion in the selection process)
 - *Data generated by these observations must be reduced in a timely fashion (to allow follow-up proposals)*
 - *Resulting data products (at a 'publishable' level) and tools developed to produce them must be made public through the HSC at the end of the proprietary period*
- The **data products** will allow for early science exploitation by the community
- The **software tools** can be later incorporated or adapted for use as part of the standard HSC data processing software for public release

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The proposal lifecycle



- Proposals must be submitted using the **HSpot** tool
 - A 'header' info or 'cover sheet' (title, proposers, abstract, proposal type, science category and total observing time requested), entered through a dedicated HSpot window
 - The scientific and technical rationale as a separate PDF file generated by the HerschelFORM PDFLaTeX package
 - The observations (AORs) as prepared with HSpot (the full set; new with respect to the previous GT KP part of the call)
- Once submitted, proposals can be updated as many times as necessary before the deadline by the PI and co-users
- Response to the call for proposals is a **two-step process**
- **Phase 1** is needed for every proposal while **Phase 2** is only applicable to accepted proposals

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Phase 1 proposal contents

- **Science case**, should:
 - show how the proposed observations match the KP concept
 - give an explanation why the science objectives cannot be met using other facilities or methods
 - refer to past and/or complementary observations available or needed
 - provide an outline description of proposed observations
- **Technical implementation**, should:
 - describe proposed observing modes and justification to use them
 - provide observing time estimates according to the estimators incorporated in HSpot
 - define special requirements or constraints (overheads are then charged; 3 min flat charge per AOR increased to 10 min if time constrained, with some exceptions, like e.g. concatenations)
 - include a plan for data product generation, validation and delivery

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Phase 1 proposal contents

- **Impact of different sensitivities on the program**
 - Based on scientific arguments; should demonstrate robustness
- **Science exploitation**
 - Baseline plans for data exploitation by the KP consortium
 - Foreseen use and value of the archived data in the long-term
- **Description of archival data products and tools**
 - Specify what they propose to provide and the benefits to the community
- **Outreach plan**
- **The consortium**
 - Summary of staff and other resources that will be committed to the program including short CVs of proposers (a few lines per co-I)

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Proposal evaluation

- The *Herschel Observing Time Allocation Committee (HOTAC)* will evaluate and recommend proposals for execution
 - Composed of 4 dual panel structures each dealing with a wide science research area (not for this initial call)
 - The HSC will assist HOTAC in the technical evaluation of the proposals
- The ESA Director of Science will ultimately receive the recommendations from HOTAC and decide on which proposals will be accepted for execution
- The PIs of all proposals will be contacted by e-mail of the results
- Acceptance of a proposal may be conditional to e.g. modifications/reduction of targets and/or observing modes

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Phase 2

- PIs of accepted proposals will be invited to **Phase 2** of proposal preparation
- To finalise the proposed observations to committed observations
- In general **only minor changes allowed** (no change of targets or observing modes unless these are recommended/suggested by the HOTAC or the HSC)
- The end result of Phase 2 is the list of committed observations which will be added to the '**Reserved Observations List**'
- **Duplicate observations** may not be proposed in further calls for proposals

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Post-call modifications

- It is anticipated that before the launch the **observing modes will be refined and improved**
- Successful proposers will be **allowed to modify their programmes** if improvements are made available
- If they are not important, changes will be entered only **once the in-orbit performance is known**, before the routine observations are started
- **Further call for proposals** are envisaged, at least two rounds, each with their GT and OT parts, that will be announced in due time (linked to in-orbit knowledge)

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Data products

- Data products
 - Level 0: raw telemetry data as measured by the instrument, minimally manipulated
 - Level 1: Detector readouts calibrated and converted in physical units, without human intervention
 - Level 2: further processed data products at a level that scientific analysis can be performed; may require human interaction in some processing steps
 - Level 3: publishable science products (KP deliverables; at least improved Level 2 products expected)

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Proprietary rights

- **Proprietary rights** (applies to each AOR)
 - **12 months** for all observations made in the first year of the routine phase, after data is available
 - **6 months** for all observations made later
 - Additional proprietary time can be granted to certain large programmes, in order to prevent the release of improperly or inhomogeneously calibrated or processed data

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Slew overhead charges

- Slew times between AORs are charged as a flat **3 minutes overhead**; automatically applied by HSpot
- Time constrained observations are charged with **10 minutes overhead**
 - All observations entered in HSpot using the timing constraint window
 - All observations entered in HSpot using the Group/Follow-on constraints, with the exception of concatenations
 - All observations requesting an orientation constraint or a chopper avoidance angle
- **Concatenated observations** are charged 3 minutes overhead per AOR unless observing the same target (no slew), then only 3 minutes overhead for the entire chain is charged; if a concatenated chain is time constrained then the overhead charge is 10 minutes for the first AOR, and 3 minutes for each following AOR, unless observing the same target; then only 10 minutes are charged to the entire chain **(see P&P doc for concatenation rules!!)**

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Duplication policies

- Newly proposed observations cannot duplicate accepted observations included in the **Reserved Observation List**
 - Use both the **ROL Search Tool** and the option 'View accepted proposals' of HSpot if necessary
 - Bottom line is that **the 'science' may not be duplicated**; doubtful or exceptional cases should be accompanied by a compelling case demonstrating that the proposed observation is not a real duplication or why the duplicate observation must be accepted (e.g. to study variable phenomena, different regions of a extended source or SSOs)
- Duplicate observations in submitted proposals detected by the HSC will be communicated to HOTAC
- Duplicate observations between proposals submitted in the same call will be addressed on a case by case basis
- **Dedicated note** with more detailed rules will be posted **soon in the AO Latest News**

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Targets of Opportunity



- For **unpredicted events** whose timing and/or location in the sky is not known at the moment of proposal submission
- **Triggering conditions** should be clearly specified in the proposal text as well as **reaction times** needed
- Use **generic names** and **dummy coordinates** (RA=00h00m00s; DEC=+00d00'00") if necessary but provide as much as possible details on the AORs and the observing time to be requested
- It is the **responsibility of the proposer** to activate the ToO proposal and to provide all the necessary information to the HSC in due time if the necessary conditions are met
- In the event of a sudden phenomenon of a nature that could not have been anticipated, Herschel observations can also be requested through **Director's Discretionary Time**

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Generic Targets



- Proposals requesting observations of a subsample of sources selected from a larger list of potential targets (e.g. to be observed soon with Spitzer or with Herschel itself), or from a class of sources, but **not yet defined at the time of submission** can also be submitted
- The observer will have to include the **full list of potential targets** or a description of them **in the proposal text**
- In **HSpot**, the observer should enter the details corresponding to the AORs associated to an **initial subset**, selected from the pool with the criteria he/she chooses. These AORs should be used for the time estimation and be representative of the kind of observations to be requested and of the total amount of time required to achieve the scientific goals
- If the proposal is accepted, **only these AORs will become part of the Reserved Observations List**; the other targets will not be blocked to other users
- At a later stage, the user may decide to replace the initial subset (or a part of it) by other targets, **always taken from the initial pool**
- The need of this observing strategy must be justified in the text of the proposal

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For additional information...



- **Herschel Open Time Key Program Workshop**
ESTEC, Noordwijk,
20-21 February 2007
- 275 participants
- Presentations on-line including summary description of GT KPs
- Pop-up poster sessions (representing ~40 potential OT KPs)



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Do not forget....



Deadline for submission of OT KP proposals is

25 October 2007 at 12h UT

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