KASC Strategies and Policies in the Extended Kepler Mission

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The present document is an updated version of the KASC strategies and policies (DASC/KASOC/0009 and DASC/KASOC/0035) that have been in place since June 2009. The new version is intended to provide guidelines for the KASC Data Analysis Procedure as well as the Scientific Publication Strategy and Policy in the Extended Kepler mission. The KASC Scientific Publications Strategy and Policy ensures that publications are accurate, that credit is fair to the authors and other contributors, and that the data and the science results should be provided to the scientific community and the public in a timely fashion. It is the aim of a continued KASC to ensure that full use is made of the Kepler data.

There is no KASC target selection in the extended mission since all targets are selected at the beginning of the extended mission (November 2012) and new targets can only be submitted through the Kepler Guest Observer (GO) program. 128 Short cadence targets and 1700 Long cadence targets have been selected by KASC to be on the target list in the extended mission.

At the start of the Extended Kepler Mission the Kepler Asteroseismic Science Consortium (KASC) will be restructured and rearranged. The key elements in the extended mission are:

- KASC will transform into a structure supporting scientific collaborations. There will be no special data rights in relation to raw Kepler data.

- KASC members are organized in working groups (WG). The WG-structure will be **revised** at the start of the extended mission. Analysis and publication of Kepler data can be coordinated and carried out in the working groups.

- KASC will have a Steering Committee. The membership of this committee will be revised at the start of the extended mission.

- The KAI Steering Committee will be continued in the extended mission in order to ensure a formal communication route to the Kepler mission under the existing facilitates (Letter of Direction). The KASOC/KOI group which was set up to support the Kepler exoplanet research (as specified in the Letter of Direction) is continued in the extended mission and will be guided by the KAI Steering Committee.

- KASC membership will be **reset** at the start of extended mission. This will ensure that members sign up for the new KASC-structure and new policies.

- KASC will have data access through the KASOC database. The KASOC webpage will be password protected. Data will be stored in the KASOC database as soon as possible after they are released by the Kepler Team. KASC-data in KASOC contain photometric data (in FITS and ascii formats), pixel level data, processed data (WG-processed data), stellar models and ground-based data.

- Members of KASC do not need to sign a non-disclosure agreement. However, by submitting a request to become a member of KASC each member is expected to follow the guidelines described in the present document.

- The paper reviewing process will only contain a one week KASC review. There will be no KAI review.

KASC in the extended mission

The decision to continue KASC in a mission phase where no KASC target selection is needed and no special data rights exist is based on discussions within the KASC community and at the KASC 5 conference in Hungary in June 2012. The main components of KASC and the reason to continue to operate KASC in the extended Kepler mission are:

- KASC is a large and unique scientific collaboration formed around the high quality Kepler data.

- KASC selected and analysed a number of targets that forms the basis for the work done by KASC (also in the extended mission). The KASC expertise will be kept throughout the extended mission.

- KASC maintains a database (KASOC) with Kepler photometry data in several data forms (incl. data in ascii format) as well as processed and analysed data.

- The working group structure is an optimized collaborative structure and initiate collaboration between many individual researchers and research groups around the world. Postdocs and PhD-students will via KASC find an easy and direct way to take part in collaborations.

- KASC organizes a successful workshop series. KASC 6 will be in Sydney in June 2013. We intend to continue this series.

- Collaboration within KASC contains a well-defined publication strategy and a well-defined boundary for collaborations.

- The KASC ensures coordination between WGs and coordination of ground-based follow-up, public outreach etc.

An obvious question to ask at the transition from nominal to extended mission is: do we need KASC at all in the extended mission with public data access? In other words, how different would Kepler asteroseismology research become if KASC was dissolved? A related question is: what benefit will an individual member of KASC have compared to not being a member of KASC?

Part of the answer is the list above. Without KASC there would be no continued science consortium with the collective knowledge that now exist in KASC and the research groups would need to reorganize. This reorganization could of course form new interesting collaborations. However, the well-defined structure and the proven concept of the KASC organization and data distribution database (at KASOC) argue for keeping the existing collaboration and the working group model used in KASC.

Besides the access to the data in KASOC (photometric data as well as processed data) an individual member of KASC will benefit from being a member in respect to collaboration and coordination as described above. New members of KASC will be able to start new collaborations much more easily than if KASC did not exist.

The new KASC should be regarded as a developing organization, within the framework defined here and without the special KASC data access and target selection. The collaborations and work within KASC will define what will develop as the core activities within this structure.

KASC Working Groups

The working groups form the basic structure of KASC. The 13 KASC Working Groups in the nominal Kepler mission were however defined to optimize the target selection. In the extended mission a new set of working groups will be formed. Each group will have the following structure and will have the following responsibilities:

- A working group (WG) will have a clear and scientifically well-defined task and aim.
- Each working group will have a chair and a steering committee.
- The chair is appointed by the KASC steering committee after consultation with the KASC community.
- The chair will appoint the steering committee for the specific working group.
- Working groups with a large number of members may form sub-groups with specific tasks. The sub-group chairs should then be a member of the WG steering committee.
- The work in the working group and the sub-groups is organized by the Steering Committee.
- Each WG should define a data publication policy which is in agreement with the KASC policies (see below).
- Each WG should ensure that the work is structured and well-defined and that postdocs and PhD-students are being prioritized and we shall ensure that PhD-projects can be defined and protected within the boundaries of a working group.
- New working groups can be suggested and the KASC steering committee can approve the formation of new groups and appoint a chair person.

We expect the working groups (WG) listed below to be formed at the beginning of the extended mission. The new groups will be introduced to KASC via the KASC newsletter and will also be described at KASOC during login. The KASC WGs in the extended mission.

WG1. Solar-like oscillations. WG Chair: Bill Chaplin
WG2. Oscillating stars in open clusters. WG Chair: Sarbani Basu
WG3. Main Sequence “classical” pulsators. WG Chair: Katrien Uytterhoeven
WG7. RR Lyrae stars and cepheids. WG Chairs: Katrien Kolenberg and Robert Szabo
WG8. RGB oscillations. WG Chair: Joris De Ridder
WG11. Compact pulsators. WG Chair: Steve Kawaler
WG12. Mira- and Semi-regular variables. WG Chair: Laszlo Kiss
WG14. Public Outreach and public KASC webpage. Chair: TBD

It should be noted that in the nominal mission KASC was limited to work and publish results on research which was based on asteroseismic analysis only. The KASC non-disclosure agreement stated that the data access for KASC members was solely for the use for asteroseismology and if an exoplanet signal was found in the KASC-data further action should be discussed with the Kepler Team. This limitation is not relevant in the extended mission. There is no non-disclosure agreement in the extended mission and work on stars with exoplanets and research in areas different from asteroseismology can be included in the WG research activities and published by KASC members. All KASC WGs will need to consider this change in the KASC boundary conditions and plan according to this.

KASC Steering Committee

The KASC Steering Committee (KASC SC) will contain the following members:

- The chair of each KASC working Group.
- The KAI Steering Committee.
- Additional members selected by the KAI SC in relation to specific KASC tasks.

The KASOC project scientist (Hans Kjeldsen) will be the secretary for the KASC SC, The KASC SC will have the following tasks:

1. Revise and optimize the KASC policies.
2. Approve new WGs and appoint chairs for the WGs
3. Ensure that the KASOC database and KASC membership list are maintained
4. Ensure a continuation of the KASC workshops and approve future workshops (time, place, goal)
5. Ensure and maintain an optimized collaboration with the Kepler Science Team (This task will be done in coordination with the KAI Steering Committee).

The KAI Steering Committee will consist of the existing four members (approved by the Kepler Team) and the chair of the KASOC/KOI group (Bill Chaplin).

Membership of KASC

The number of KASC members is at the end of the nominal mission 560. The membership of KASC will be reset at the beginning of the extended mission. The aims of this resetting the membership are:

- We want to confirm the membership in order to optimize the future structure
- We need to ask each KASC member to confirm their relation to the individual working groups
- We need to ask each individual to accept the new KASC strategies and policies (there will be no non-disclosure agreement in the extended mission)
- We will like to collect up-dated contact information (and email addresses) for all KASC members.

The reset of KASC membership will be done at 15 November 2012. We will then request all members (and new potential members) to confirm their KASC membership and declare which working groups they expect to be members of in the future. The whole process will be done through the KASOC webpage. All KASC WG-chairs will receive an email when a KASC member declares membership of a specific WG.

KASOC will - based on the renewal of the KASC membership - form new *kasc* and *kascnews* mailing lists.

KASOC will create a KASC newsletter which in the future should provide information on KASC and news from KASC. The first issue of the newsletter will contain information on KASC in the extended mission.

The KOI working group at KASOC

Since 2008 the Kepler Asteroseismic Investigation (KAI) and KASC have operated under the Letter of Direction (Letter of Direction regarding asteroseismic investigation within the Kepler project from the Kepler Project (Project), represented by William Borucki, to the Kepler Asteroseismic Investigation (KAI), represented by Ronald Gilliland). The Kepler project requested – among other tasks (in the Letter of Direction) - that the KASOC/KAI shall

- Provide stellar parameters (particularly size) in a timely fashion to the Project; the goal is to provide the results in three months or less after receiving time-series data.

- Perform asteroseismic analyses on any additional short-cadence targets upon request from the Project.

- Revise the asteroseismic target list as appropriate. In particular, identify cases suitable for asteroseismic analysis from those targets selected for short-cadence planet-transit observations.

The data for this activity were in the nominal mission (Phase E) not released to the public or to KASC. As a result of those data access limitations the activities was done at KASOC in a KASOC/KOI (Kepler-Object-of-Interest) group appointed by the KAI Steering Committee and approved by the Kepler Team.

In the extended mission (continued Phase E) the Letter of Direction will continue to guide and steer the asteroseismic support of the exoplanet research activities.

Data in the extended mission phase will be public and work on exoplanet stellar parameters and asteroseismic analysis of exoplanet host stars will also take place in the KASC working groups. There will be no, and should not be any, limits to activities which can be performed in the KASC working groups.

There are however still the need from the project point of view to continue the activities by KASOC as outlined in the Letter of Direction and do this in a coordinated and focused way. The KASOC/KOI group will therefore continue to operate but will focus on the activities which are specified in the Letter of Direction and needed in order to perform the coordinated KOI analysis done by the Kepler Team and the Kepler working groups.

The KASOC/KOI group may see the need to add new members based on the request to perform the KOI asteroseismic analysis. However, the KASOC/KOI group will not have a general call for new members. The present size and composition of the group is at present optimized to perform the requested tasks as specified in the Letter of Direction. It should be noted again that the data on which the KASOC/KOI group works will be public.

KASC Data Release, Scientific Publication Strategy and Policy

The paper review process in the Extended Mission is described below. One will also below find specific guidelines for style and content. The style and content guidelines will be of particular relevance to all authors – by following these from the outset, the process of review at all levels will be eased.

Members of KASC have access through the KASOC database to all Kepler data as soon as the data are made available in the KASOC. The database contains data that can also be found via the NASA/MAST archive. In addition to the raw data we also store KASC-corrected/modified data, Stellar models, Stellar parameters (estimated by KASC), ground-based data (raw and reduced) and KASC publications.

All data are released through the KASOC database: http://kasoc.phys.au.dk. Individual KASC members will receive their private password in order to access the database.

KASC members work under a data policy described in the present document. The data policy for KASC in the nominal mission is not valid anymore. If a person cannot accept the policy or fails to comply with it, the KAI Steering committee can take action to cancel the KASC membership for that person.

Data policy / data publication guidelines

1. All KASC members have unrestricted access to all KASC-data in KASOC. Access is password controlled and data downloads are logged

2. KASC is based on collaboration and we expect that all members that contribute significantly to a given data set (analysis, modelling, ground-based follow-up etc.) should have the possibility to be on publications related to that given data set. Decisions on authorship will take place at the WG-level and we encourage collaboration. Each WG should define their specific guidelines and distribute

those to all WG-members. Cases of doubt may involve consultation with the KAI Steering Committee.

3. All data are public and the WG-publication guidelines need to ensure that KASC-membership is a benefit compared to non-KASC members.

4. Any publication that will be submitted shall follow the “Specific guidelines for publications” given on page 6 and 7 in the present document

5. The review process does not have a KAI review and there is no formal approval of papers. Papers can be submitted at any time but any paper should go through a KASC review before it is submitted to a journal.

Paper review and submission process

The paper review process in the extended mission is different from the one used to review KASC papers during the nominal Kepler mission. There is no KAI review of papers and papers will only need to go through a one week KASC review before submission to a journal.

A. Papers can be submitted to KASC review via the KASC webpage. Papers can be submitted at any time.

B. The KASC review will take one week and when a paper is submitted to KASC review an email will go to all members of KASC. The aim of the KASC review is to allow KASC members to give comments, ask questions etc. on specific results. The authors will receive comments directly from the KASC users via the KASOC webpage. Papers should not be submitted before the KASC review is done and the questions/comments are considered by the authors.

C. After the KASC review the authors can submit to the journal and the rest of the publication activities will be done in agreement with the journal refereeing process. KASC or KAI Steering Committees will not be involved. **Papers should not be put on astro-ph (http://arxiv.org/archive/astro-ph) during the KASC review.**

How to submit?

All papers need to be submitted through the KASOC webpage (http.//kasoc.phys.au.dk) Papers can be submitted by any member of KASC, but all papers need to be discussed in the relevant working group before submission. If specific issues arise that cannot be resolved within the WG in connection to the submission of a given paper, the WG chair should discuss those issues with the KAI Steering Committee.

At the KASOC webpage: http://kasoc.phys.au.dk one should go to “Publications” and then press “Submit/update paper”. Please follow the guidelines provided at the webpage. This webpage should also be used when the papers are submitted to the journal and after they are published.

Specific guidelines for publications

The following description is an expanded version of the Kepler publication guidelines described by David Koch (deceased Deputy Science PI). It contains among other things guidelines aiming at reaching style uniformity in connection to publications of Kepler data.

Style Uniformity

When writing papers you should use the following style for uniformity:

- ***Kepler****,* when used to refer to the mission, should be in *italics*. It is the title of the mission.

- **KASC**, **KASOC** and **KIC**; should **not** be in *italics*.
- Kepler-4b, etc.: Not in italics and use a **hyphen**.
- Earth-size: Should be without an ending –d. Think of family-size, queen-size, etc. *Greeg Reference Manual 8th ed.* ¶823.d allows for either form. We have chosen **no –d**.
- Habitable zone (singular): Stars have a single zone unless you really are talking about multiple zones. So **no -s**
- *Kp* or kepmag: For *Kepler* magnitudes and **p is lower case**, not a subscript.
- Transits and occultations: Stars have primary and secondary eclipses. Planets transit and occult (are covered over).

Concerning Keywords, abstracts and acknowledgements the following guidelines apply:

Keywords: Use *Kepler*

Abstracts: Even if you don't have *Kepler* in the title make sure *Kepler* is in abstract, so ALL papers in astro-ph (arXiv.org) can be found by searching for *Kepler* in the abstract

Target names: Publications should make it very clear which targets are used by providing the KIC-ID as KIC xxxxxxxx, even if other names, e.g. RR Lyrae are primarily and commonly used.

Data used: Spell out which quarters and months of data are used, and whether short or long cadence. Make it clear whether the SOC pipeline "raw" or "calibrated" data are used. Also make clear if the WG# corrected datasets are used.

Frequency units: We recommend that frequency units in text and figures should be in μHz or mHz rather than c/d (which is not so relevant for a space mission in orbit around the Sun).

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