Extreme Value Analysis IV
Gothenburg, August 15–19, 2005
Software session – Announcement[1]

The theme of the session is to strive for a larger coherence in the existing software for extremes. Ultimately, this should result in the creation of a "European Initiative for Extreme Value Software", if possible funded by the EU. Michael Thomas, University of Siegen, has volunteered to coordinate the first step of setting up a web site with participating universities and a description of the software activities. Interested parties are requested to contact Michael at michael@stat.math.uni-siegen.de.

A scattered landscape
The existing extreme value software still seems wanting in coherence, completeness, and user friendliness. Most software is the result of independent efforts by different people; see for instance the review at the end of this note. Typically, authors of papers write some computer code to run a simulation study or perform a very specific data analysis. Some people have assembled packages capable of performing a number of extreme value procedures.
Most of the time, however, scientists seeking to apply EVT find themselves lost in a scattered landscape of incompatible packages each with limited functionality. Nevertheless, the availability of good software is a *conditio sine qua non* for EVT to overcome its current status of some exotic branch of mathematical statistics and find the recognition and applications it deserves. Much could be gained if the various efforts to write software would be combined into larger, coherent units.
The EVA 2005 conference, gathering a major part of the extreme value community, could provide the momentum to the creation of such a larger network of writers of extreme value software.
Specific topics are the following:

Contents. During the last two decades, the literature on extreme value analysis has been growing explosively. Which algorithms need to be a part of a fully equipped extreme value toolkit?

Compatibility. In an ideal world, the existing packages can be combined and extended at will to form larger software units. In reality however, the required (re)programming efforts may be so extensive that starting from scratch seems the easier option. How, then, should packages be written in order to facilitate extension and combination?

Coordination. How to coordinate all the programming efforts? Open source and freeware like the CRAN project or through a commercial software house (S-plus, Matlab)?

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[1]Comments welcome to J. Segers, Tilburg University, the Netherlands (phone: +31 (0)13 466 8754; E-mail: *jsegers@uvt.nl*)

United we rule
The conference's ambitions can only be realized within a positive climate of interaction, openness of mind, and collaboration. The traditional talk-questions conference format will be amended in order to create such an inspiring scientific environment.

Talks with discussion.   Talks on the following subjects will be especially welcome:

- New or improved software packages

- Reviews on existing software

- Efforts to the creation of larger software units

- Proposals to set up software writer networks

Every talk will be followed by a five-minute presentation by an invited discussant.

Round-table discussion.   Further ideas and synergy are to be triggered by a round-table discussion. People will be invited to comment upon a certain statement, proposal, or question, for instance as in the list below. After each such intervention, the floor is open for discussion.
Topics of discussion could be the following:

- What are the opportunities to obtain funding for the development of extreme value software?

- The homepage of the journal *Extremes* should serve as a host from where the different packages can be downloaded. Software and data-sets pertaining to articles in *Extremes* should be available on the journal's homepage.

- Should the development of larger and user-friendly packages be left to commercial players in the market or should it be the scientists who take the initiative?

Article in *Extremes*
The session will form the basis of a review article on extreme value software, to be submitted to *Extremes*. The article will primarily address practitioners seeking for appropriate software to apply extreme value methods. Furthermore, the suggestions and conclusions arising in the software session will be incorporated so as to inspire and guide further efforts in this field. To obtain maximal authority, the article will be complemented by discussions from hopefully as many authors as possible.

Appendix: Existing software for extremes

The overview[2] below is based on the list published on the homepage of the Climate Analysis Group of the University of Reading.

- Alec Stephenson has written a number of packages in R, some of which are original, while others are translations into R of packages by other authors in other languages.

- Stuart Coles is the author of the S library `isvem`. This library was translated into R by Alec Stephenson. Eric Gilleland's toolkit `exTremes` toolkit is a graphical user interface for this R version.

- Also translated into R by Alec Stephenson is Alex McNeil's S package `evis`.

- The Matlab `WAFO` toolbox by Georg Lindgren, Igor Rychlik *et al.* provides routines for statistical analysis and simulation of random waves and random load.

- Faruk Selçuk and Ramazan Gençay have written the Matlab package `evim`.

- Accompanying to the book(s) by Rolf-Dieter Reiss and Michael Thomas is the stand-alone package `Xtremes`.

- Many of the data-sets and routines (in S or Fortran) accompanying the 2004 book by Jan Beirlant *et al.* are available online as well.

- The `EXTREMES` software package by Jérome Ecarnot *et al.* is written in C++ with a Matlab GUI.

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[2]Being not included in the list is not a token of depreciation but simply the result my obliviousness. I would be grateful to be made aware of other valuable EVT software contributions.