

Beirlant, J., Y. Goegebeur, J. Segers, J. Teugels: *Statistics of Extremes: Theory and Applications*. (Wiley Series in Probability and Statistics). John Wiley & Sons, Ltd, Chichester, 2004. 522 pp. H/C € 92.90, sfr 149.00. ISBN-13: 978-0-471-97647-9. www.wiley.com

BEIRLANT et al.'s book takes two great challenges: The first is to aim at providing an up-to-date textbook on statistics of extremes – a field that has been developing very rapidly over recent years. The second challenge is to allude to Emil Julius GUMBEL's classic 1958 textbook by choosing the same title. GUMBEL's book had been published as an unabridged – and inexpensive – reprint (GUMBEL, 2004) in the same year of the initial release of BEIRLANT et al. Thus, scientists working in the field of extreme events now have easy access to both textbooks, and it is instructive to compare BEIRLANT et al.'s approach to that of GUMBEL fifty years ago. This comparison will further help to answer the question if the new textbook qualifies as a candidate to become a classic as GUMBEL's work did in the late 1950s.

The first real strength of BEIRLANT et al. is the list of references focusing on recent decades and the years from 2000 on. Papers of statistics of extreme events nowadays appear for so many applications, and in such a large variety of journals that it is hard to maintain a full overview on new developments which might be beneficial for one's own field of interest. And thus, likely, the wheel is sometimes reinvented by authors from one community who are not aware of the literature produced by another community.

To show what such communities are and which variety of applications nevertheless lead to technically similar approaches in extreme value analysis, BEIRLANT et al. start their 522-page textbook with an overview chapter which motivates the subject of extreme value theory, introduces quantile-quantile and excess plots, and then sets out to provide examples from extreme value statistics from fields like hydrology and meteorology, insurance and finance data analysis, geology, and metallurgy.

Following the introductory chapter, there are ten more chapters presenting the bulk of information. Chapter 2 reviews the probabilistic side of extreme value theory and discriminates between the three possible classes of extreme value distributions. Chapter 3, "Away from the maximum" covers the important topic how more than just the maximum value of a sample can be used to estimate the distribution tails, while Chapters 4 and 5 deal with tail estimation under Pareto-type models, and for all domains of attraction, respectively. Case studies are presented in Chapter 6 and take up a thread that had started in Chapter 1, using the Belgian Condroz soil database, Belgian reinsurance claim data, and

earthquake data. Chapter 7 is devoted to the broad applications of regression analysis in distribution estimation; here, also maximum-likelihood estimators and the peaks-over-threshold method are outlined. The chapter closes with a case-study example from insurance data. Chapters 8 and 9 treat the multivariate extreme value theory in some detail, and Chapter 10 deals with extremes of stationary time series. Chapter 11 presents the Bayesian methodology in extreme value statistics. The book closes with the already mentioned 18 pages of bibliography, and separate author and subject indexes (completeness of the latter can be improved).

The authors' writing style tries to be neither too mathematical nor too applied. Based on lectures given by the authors, the many example applications and case studies help to prevent the text from becoming too technical. In addition, several of the chapters close with separate appendices presenting background material that could distract the reader's attention if included in the chapters' text bodies. Nevertheless, the book still bounces back and forth from rather technical parts to applied parts, instead of using a homogeneous compromise between the two throughout.

Sometimes, issues which have a long history of (controversial) discussion in the field of extreme value statistics are addressed only quite briefly. An example of this is the topic of choosing adequate "plotting positions" for data samples in distribution parameter estimation. This is a quite practical, but also important question (cf. GUMBEL, 2004), and the authors mention it early (pp. 5–6). However, this is dealt with rather briefly by the authors who only claim that there are some possible choices for plotting positions and then make their own choice (which is fully in line with GUMBEL, 2004; cf. the recent paper by MAKKONEN, 2006). One or two more paragraphs of text would have clarified why the authors' choice is likely the most adequate one beside the long discussion on this matter in the literature. Thus, while the text is extensive in general, there are still some points which could be smoothed out in the future to improve the qualification of BEIRLANT et al. as a self-contained textbook.

While the technical quality of the book is good, the page layout shows some potential for improvements. As the publisher's editorial page reveals, the book was produced "from LaTeX files supplied by the authors". A little extra technical editing by the publisher would have helped to improve the page layout and readability of the book. This comment mainly concerns the way how the authors have presented figures in their work. Nearly all figures in the text are simple two-dimensional line plots. The authors have a tendency to print these unnecessarily large (full text width). This causes further problems