Solving the Woes of Statistical Seismology:
The Community Online Resource for Statistical Seismicity Analysis (CORSSA)

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& You?
Determining Completeness Subjectively

![Graph showing the relationship between Log10 (Cumulative Number of Events/Year) and Magnitude.]
Determining Completeness Subjectively
Determining Completeness Subjectively

![Graph showing the relationship between magnitude and the cumulative number of events/year in a log scale.]
Phase Of Omega Signals As Received At Omsk For December 28-30, 1983

Earthquake in Hindu Kush Region

dashed: expected pattern

Poisson Model
VLF Prediction Tests from Michael, GRL, 1997

Result from Data

Results from Simulation Models

Moderate clustering

Minimal Clustering

No Clustering

p-value
Preseismic Lithosphere-Atmosphere-Ionosphere Coupling

atmospheric-ionospheric anomalies before the earthquakes do exist

Anomaly before Chi-Chi earthquake after Liu et al., GRL, 2000
From Liu et al., JGRA, 2006

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Existing Resources

Problems:
As good as each piece is, the whole is:
Incohesive
Hard to find
Inadequate as a cookbook for beginners
Possible Solutions

Write a book:
   a substantial achievement,
   but you have to finish them,
   they are hard to update, and
   expensive.

Create a central web site that points to other resources:
   easy to do,
   but content will be inconsistent
   and therefore hard to follow.

Write an online book:
   but what does that mean,
   is it a Wiki,
   a collection of pdf files,
   or what?
The Community Online Resource for Statistical Seismicity Analysis (CORSSA)

- Book of Review/Cookbook Articles
- Wiki & Forum with Identified Authors

Substantial articles Prepared in LaTeX
Presented in PDF for Viewing online with clickable links,
Download for printing, and Print-on-demand

Discussion of book Links to external resources Allows for small contributions
Review/Cookbook Articles

Cover a specific task
Brief, referenced, review of theory
Discuss tradeoffs in analysis choices
Discuss pitfalls
Link to available codes
Give examples of excellent applications

Introduction
How to educate yourself as a statistical seismologist - David Vere-Jones
Fitting Frequency-Magnitude Distributions - Stefan Wiemer
Catalog Completeness - Danijel Schorlemmer, Jochen Woessner
Estimating Seismicity Rates - Andy Michael
Catalog Declustering - Danijel Schorlemmer, Matt Gerstenberger
Catalog Artifacts and Quality Control - Stefan Wiemer
Data Format Standards (QuakeML) - Danijel Schorlemmer
Synthetic Seismicity Catalog Production -
    Andy Michael, Agnes Helmstetter, Karen Felzer
Point Processes - David Harte
Fitting ETAS and Omori-Utsu Distributions - Yosihiko Ogata
Authoritative

1. Known, expert authors
2. Peer review with an editorial board
3. Editorial board oversight of Wiki and forum
4. Basic science must be previously published in a peer reviewed journal
5. Provide ways to benchmark codes
Up-to-Date

1. Updated on an annual basis
2. Schedule gives authors deadlines
3. Schedule provides time for peer review
Prominent

1. Articles in *Eos* and SRL
2. Presentations at meetings
3. Provide clear guidelines for citing CORSSA
User-Friendly

1. Encourage use of data format standards.
2. Encourage development of portable codes.
3. Encourage development of stand-alone codes rather than using Matlab or other commercial packages.
The Key Word in CORSSA Is Community

CORSSA’s goal is to improve the quality of research that applies the methods of statistical seismology.

This will benefit the community but requires that you join us to suggest articles, to write articles, or to contribute to the Wiki.

Please join us.