

# Information Visualization

## Intro, *Time Series Exercise*

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**<http://www.cs.ubc.ca/~tmm/courses/547-20>**

**Welcome!**

# This week

- async read
  - VAD Chapter 1
  - Course Logistics
- async discuss
  - self-intros (light load this week)
- sync (now!)
  - logistics Q&A
  - scholar strike, in brief
  - time series exercise
    - small groups via zoom breakout
    - technology pilot, first time for online version of class!

# Course Logistics Q&A

# Scholar Strike

# Scholar Strike

- speaking out
  - against police brutality
  - in support of Black Lives Matter
- inclusion, diversity, equity, & ethics
  - in this course
    - respectful and inclusive learning setting
  - in field of visualization
    - diversity and inclusion for participation within field
    - visualization as mechanism to inform and promote change
    - ethics of data use

# Readings and resources

- Data Visualization Society & Nightingale Journal

- Resources, including Data Sources for Analysis of Racial Bias

- <https://www.datavisualizationsociety.com/resources>

- 6-part article series on pioneering work of W.E.B. duBois

- <https://medium.com/nightingale/w-e-b-du-bois-staggering-data-visualizations-are-as-powerful-today-as-they-were-in-1900-64752c472ae4>

- Data Feminism book

- data science and data ethics, informed by intersectional feminism

- <https://datafeminism.io/>

- Designing for People initiative ([dfp.ubc.ca](https://dfp.ubc.ca)) events (videos coming soon)

- ethics in tech & data use seminar yesterday

- <https://dfp.ubc.ca/news-and-events/events/three-lessons-towards-ethical-tech-research-ethics-ethics-education-and>

- two EDI workshops <https://dfp.ubc.ca/news-and-events/events/edi-workshop>

# Exercise: Time Series

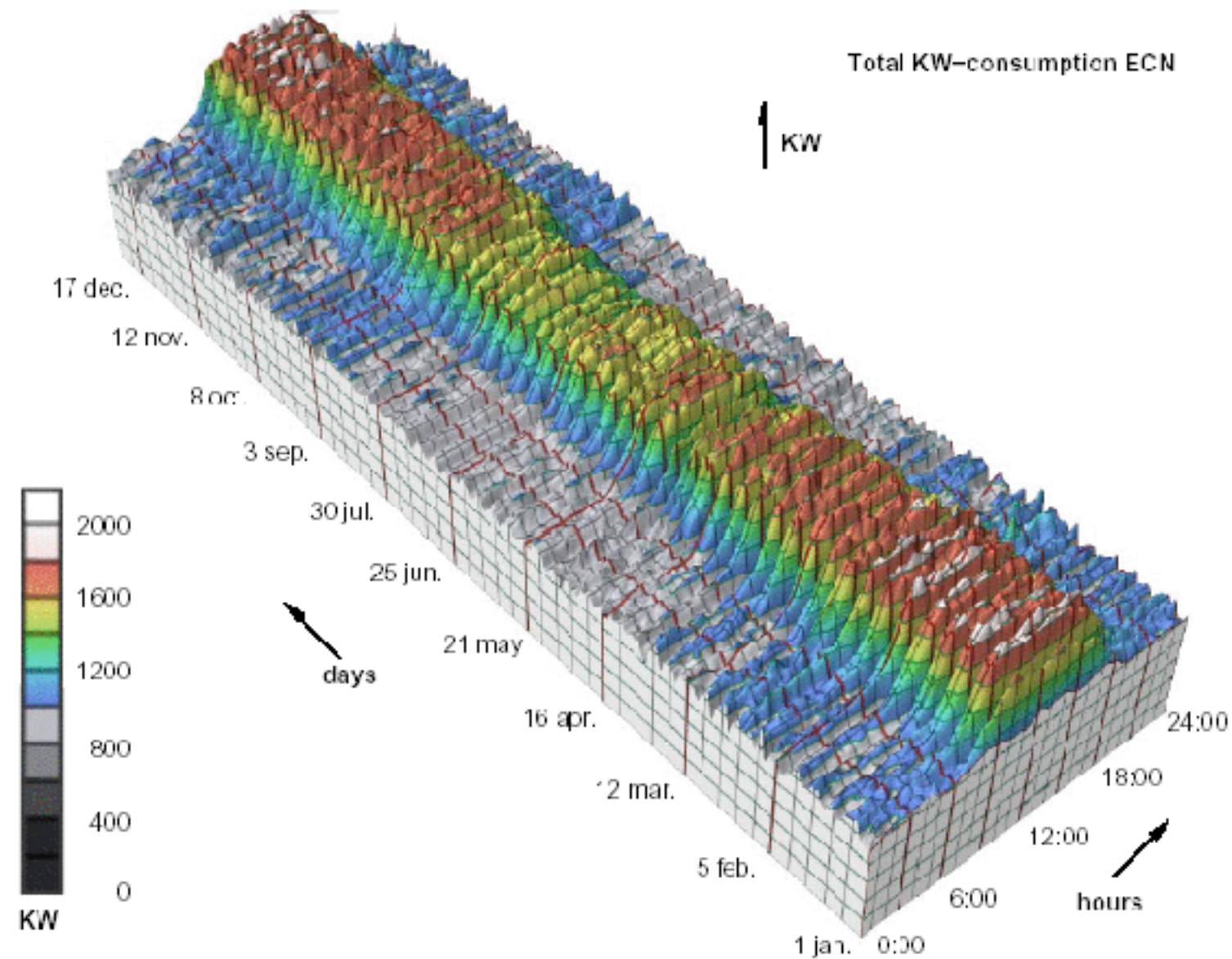


# Now: In-class design exercise, in small groups

- Five time-series scenarios
  - 1: every 5 min, duration 1 year, 1 thing: building occupancy rates
  - 2: every 5 min, 1 year, 2 things: currency values (2 exchange rate)
  - 3: several years and several things: every 5 min, 5 years, 10 currencies
  - 4: many things: every 5 min, 1 year, CPU load across 1000 machines
  - 5: several parameters, many things: every 5 min, 1 year, 10 params on 1000 machines
- Small-group exercise: 20-25 min
  - one group per Zoom breakout (4 people/group)
  - brainstorm possible visual encodings & interactions for your assigned scenario
  - document in your group's googledoc w/ text & sketch images
- Reportback: 30-40 min
  - flip through googledocs, sometimes questions for group spokesperson
- Design space examples/discussion: 15-20 min

# Case 1: 3D Approach (Not Recommended)

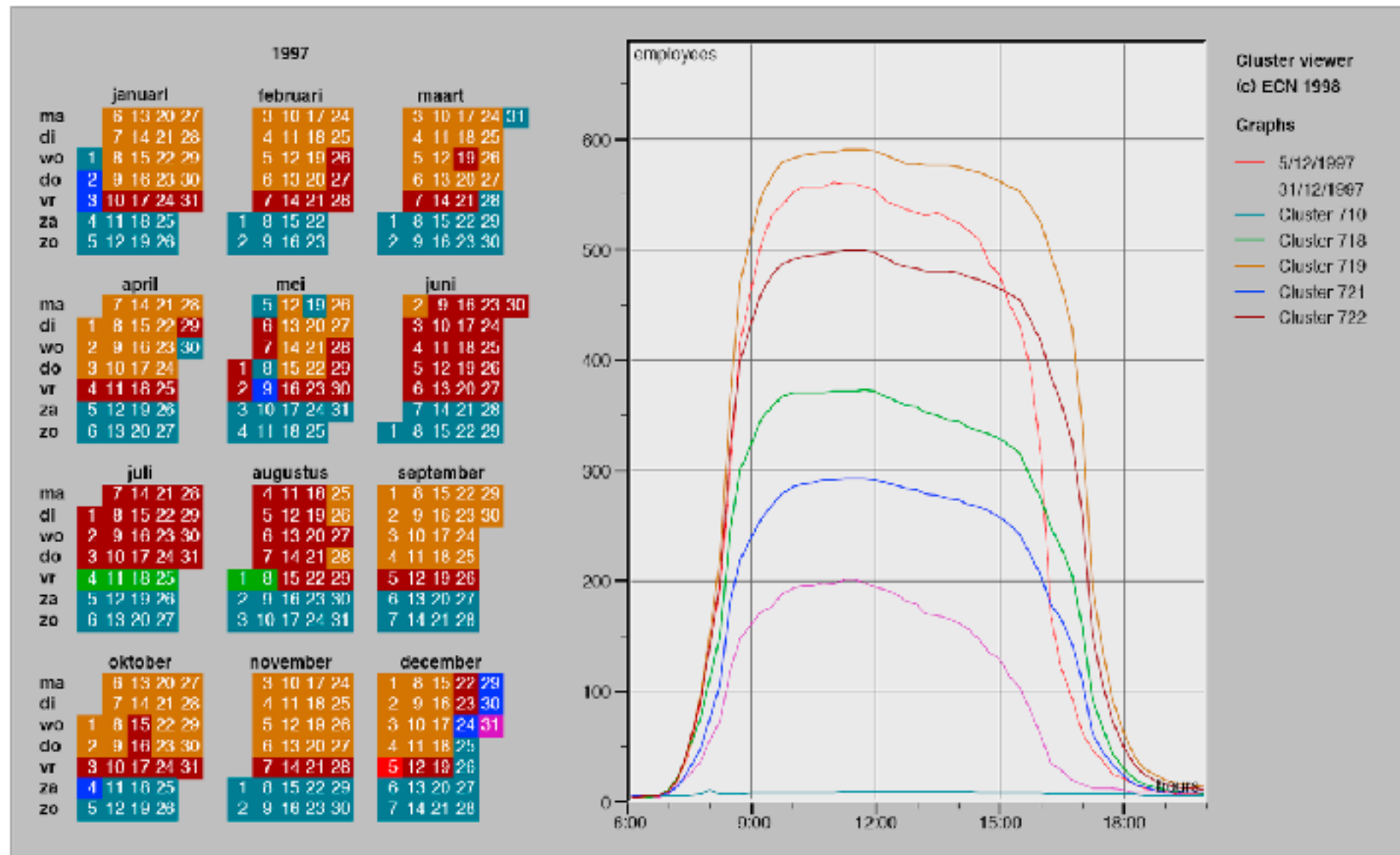
- extruded curves: detailed comparisons impossible



*[Cluster and Calendar based Visualization of Time Series Data. van Wijk and van Selow, Proc. InfoVis 99.]*

# Case 1: Cluster-Calendar Solution

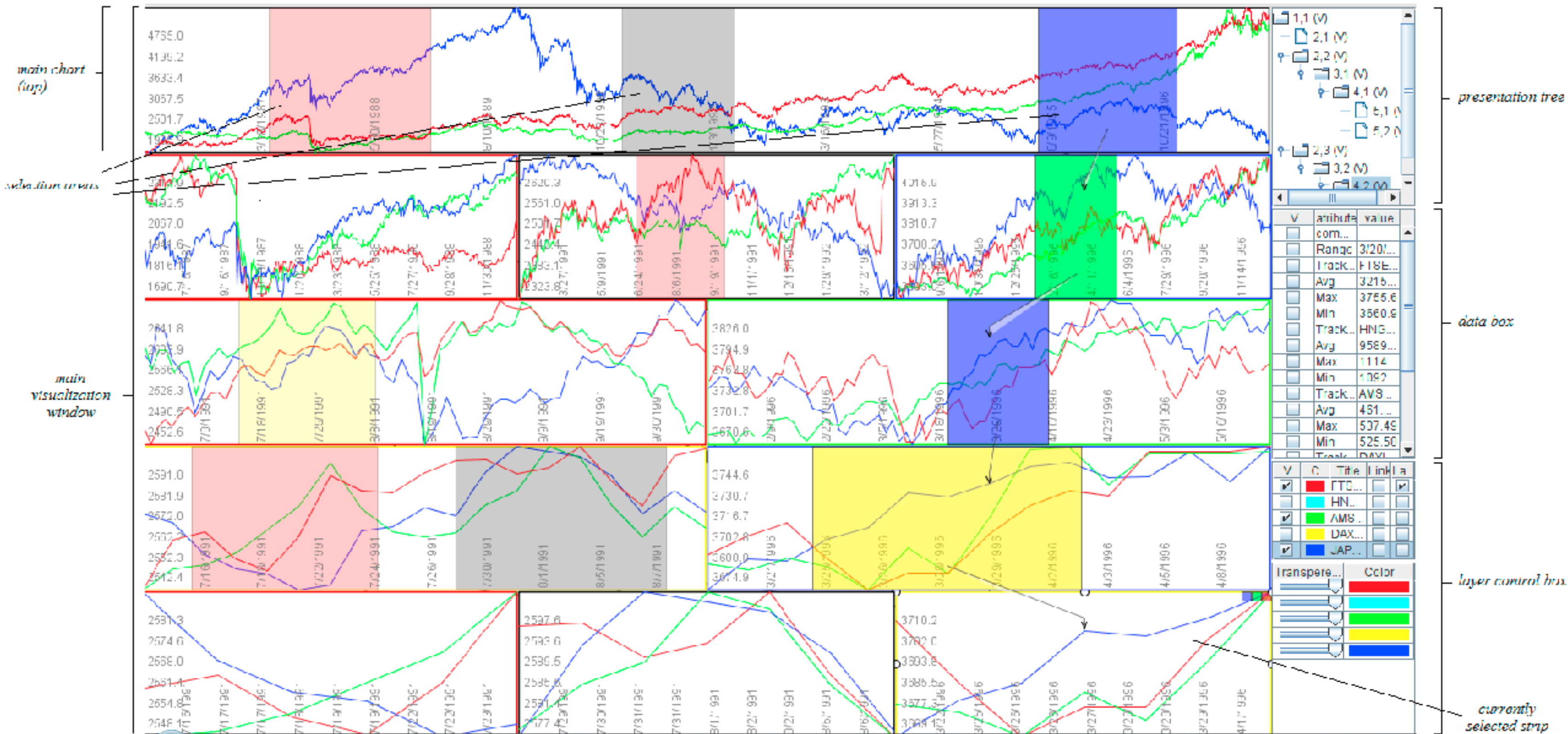
- derived data: cluster hierarchy
- juxtapose multiple views: calendar, superimposed 2D curves





# Case 2: Stack Zooming

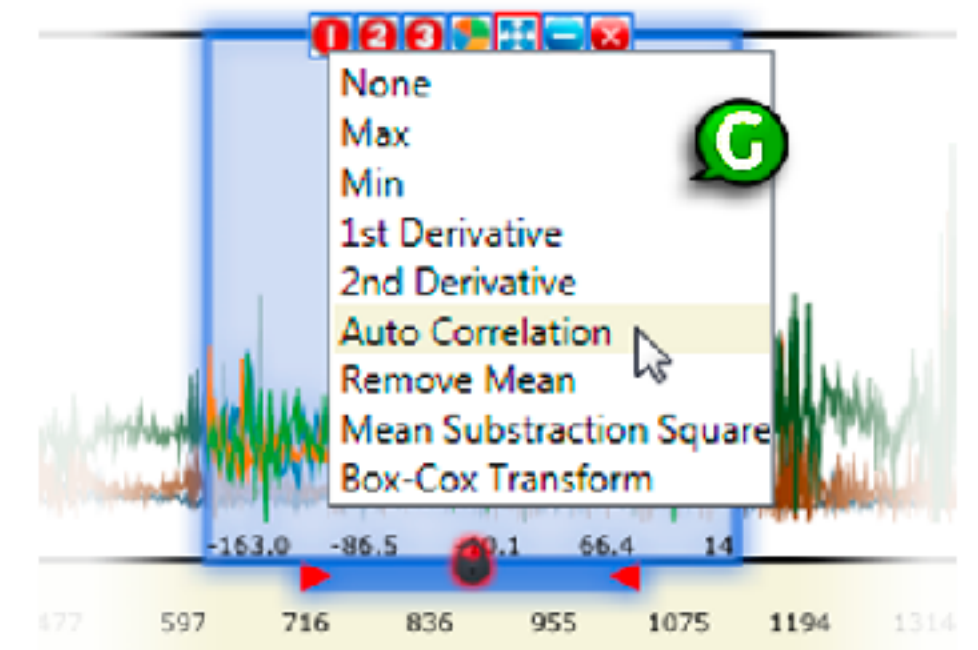
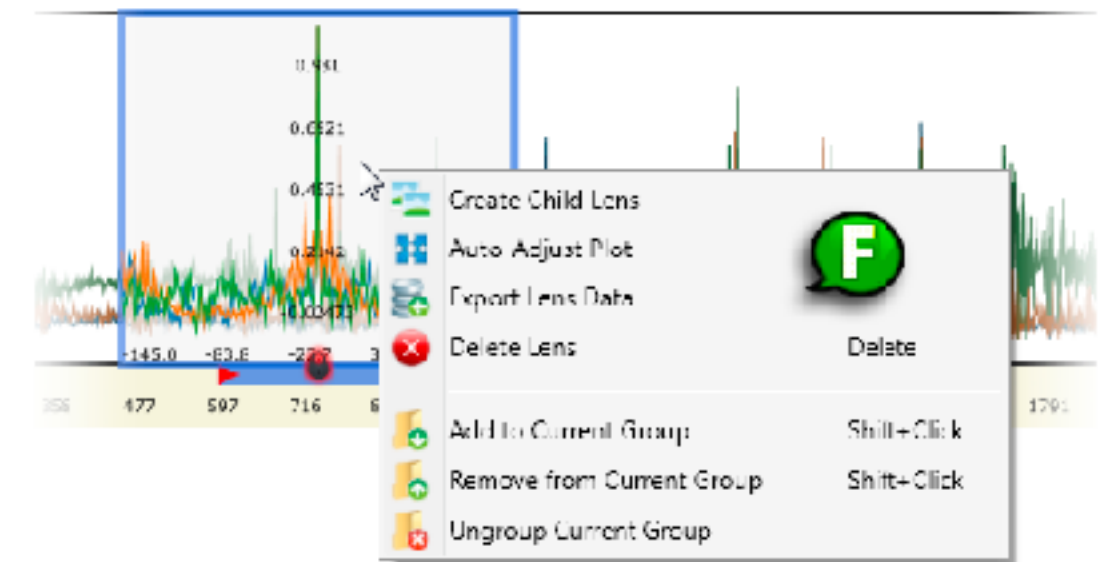
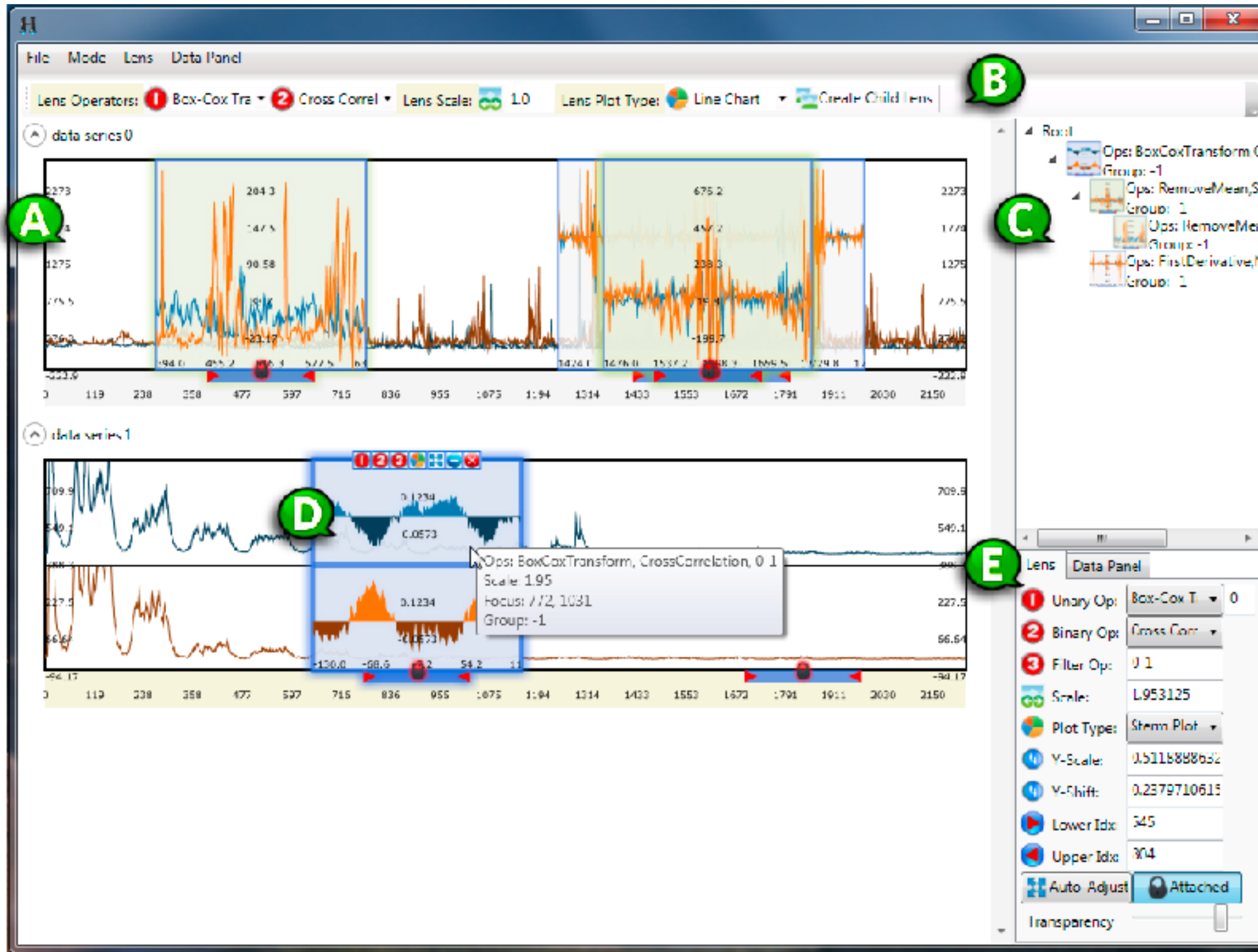
<https://youtu.be/dK0De4XPm5Y>



[Stack Zooming for Multi-Focus Interaction in Time-Series Data Visualization. Javed and Elmqvist. Proc PacificVis 2010, p 33-40.]

# Case 3: ChronoLenses

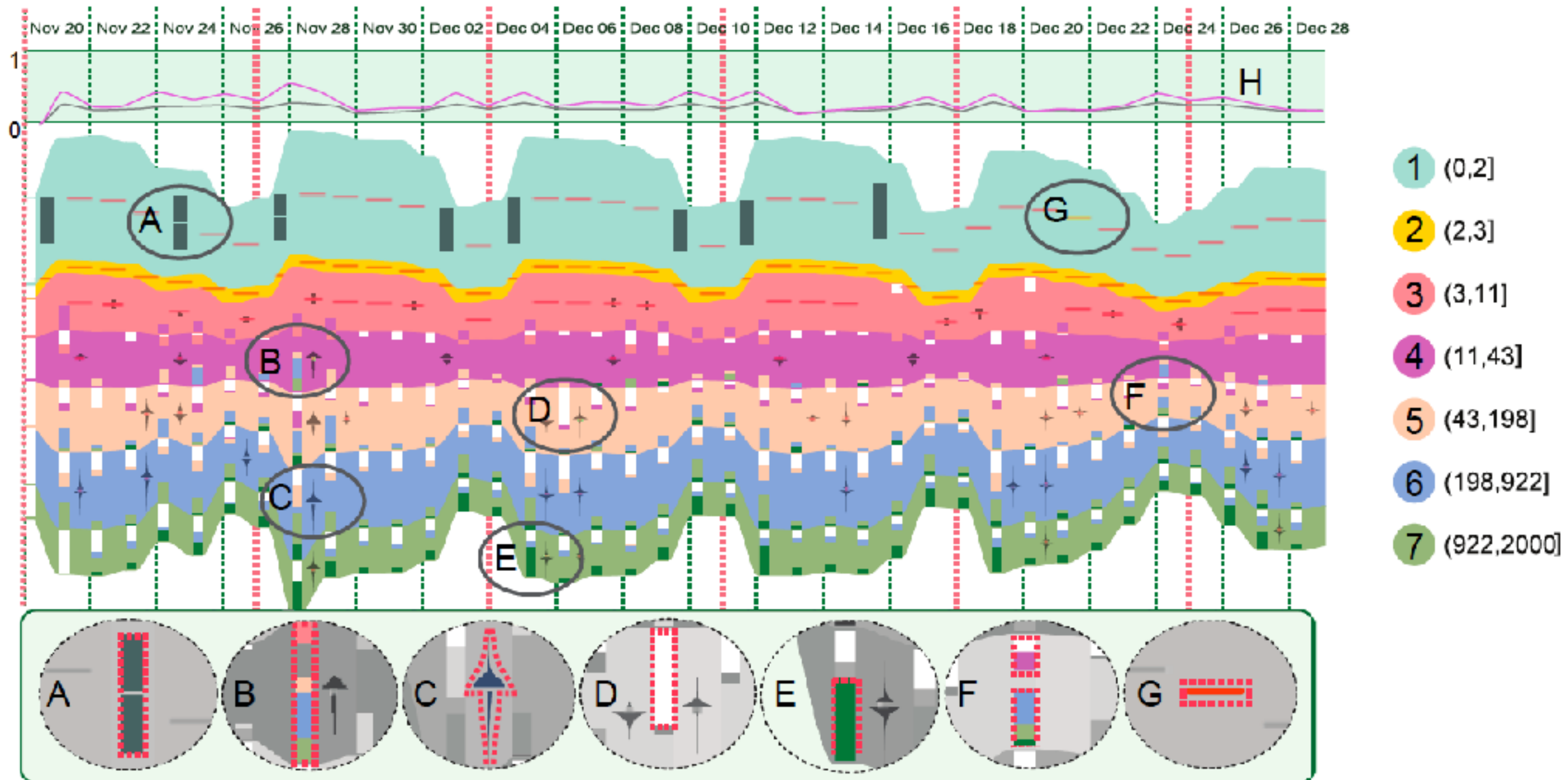
<https://youtu.be/k7pl8ikczqk>





# Case 4: RankExplorer

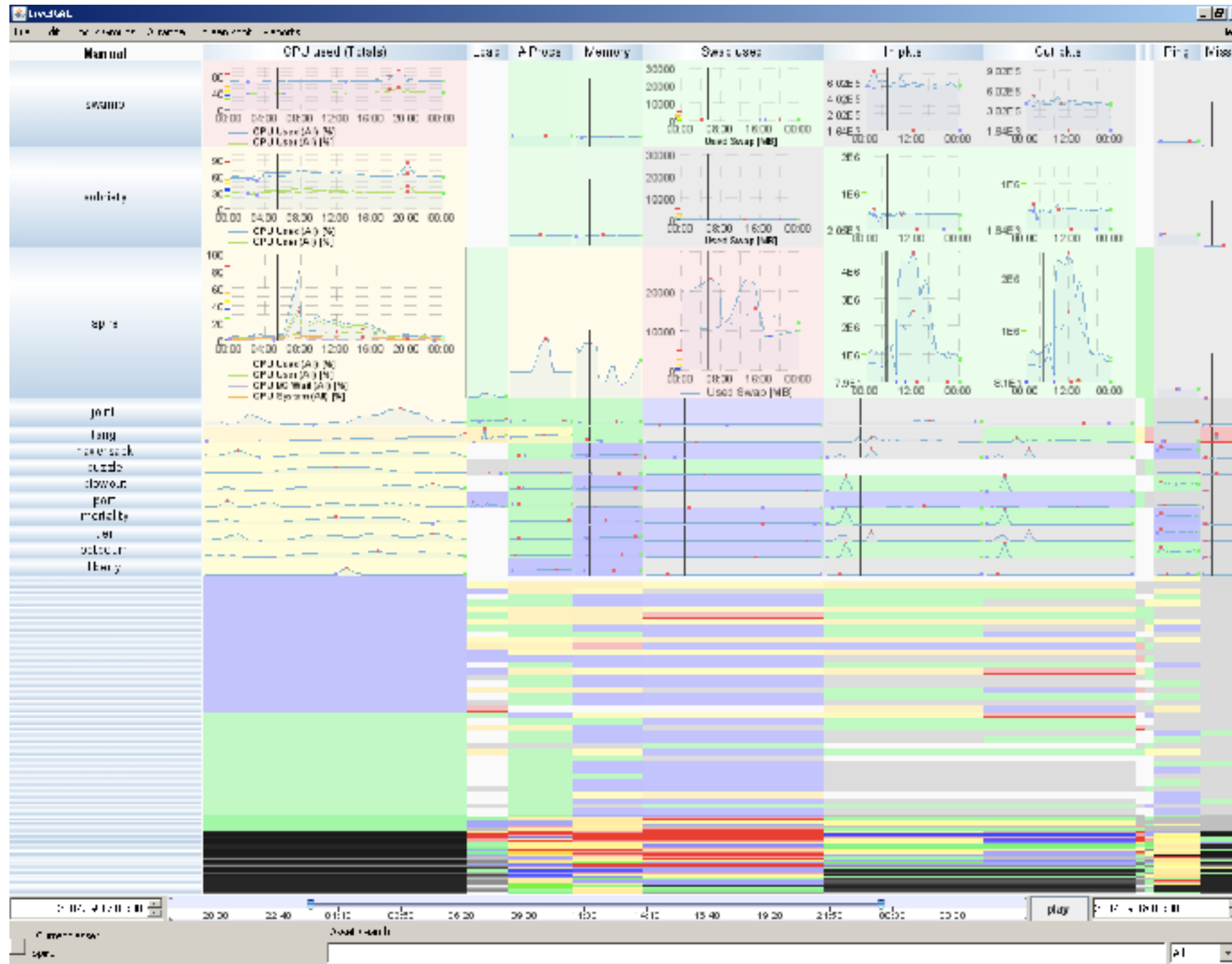
<https://youtu.be/rdgnlqcZ2A4>



[RankExplorer: Visualization of Ranking Changes in Large Time Series Data. Shi, Cui, Liu, Xu, Chen and Qu. IEEE TVCG 12(18):2669-2678 (Proc. InfoVis 2012)]

# Case 5: LiveRAC video

<http://youtu.be/Id0c3H0VSkw>



[LiveRAC - Interactive Visual Exploration of System Management Time-Series Data. McLachlan, Munzner, Koutsofios, and North. Proc. Conf. on Human Factors in Computing Systems (CHI) 2008, pp 1483-1492.]

# Next Time

- to read
  - VAD book, Ch 2: What: Data Abstraction
  - VAD book, Ch 3: Why: Task Abstraction
  - paper: Nested Model