Framework for Detection and Analysis of Land Cover Changes Using Visual Analytics

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Characteristics of remote sensing data

- High dimensionality: Multiple bands & combinations
- High complexity: No laboratory conditions
- High variability (weather conditions etc.)
- Temporal ‘snapshots’
- Highly uncertain data

➡ Analysis of changes is a challenging task

How can Visual Analytics help?

Automatic change detection algorithms

+ Visual exploration and analysis

+ User interaction

= Iterative change analysis

Why another framework?

Two major goals:

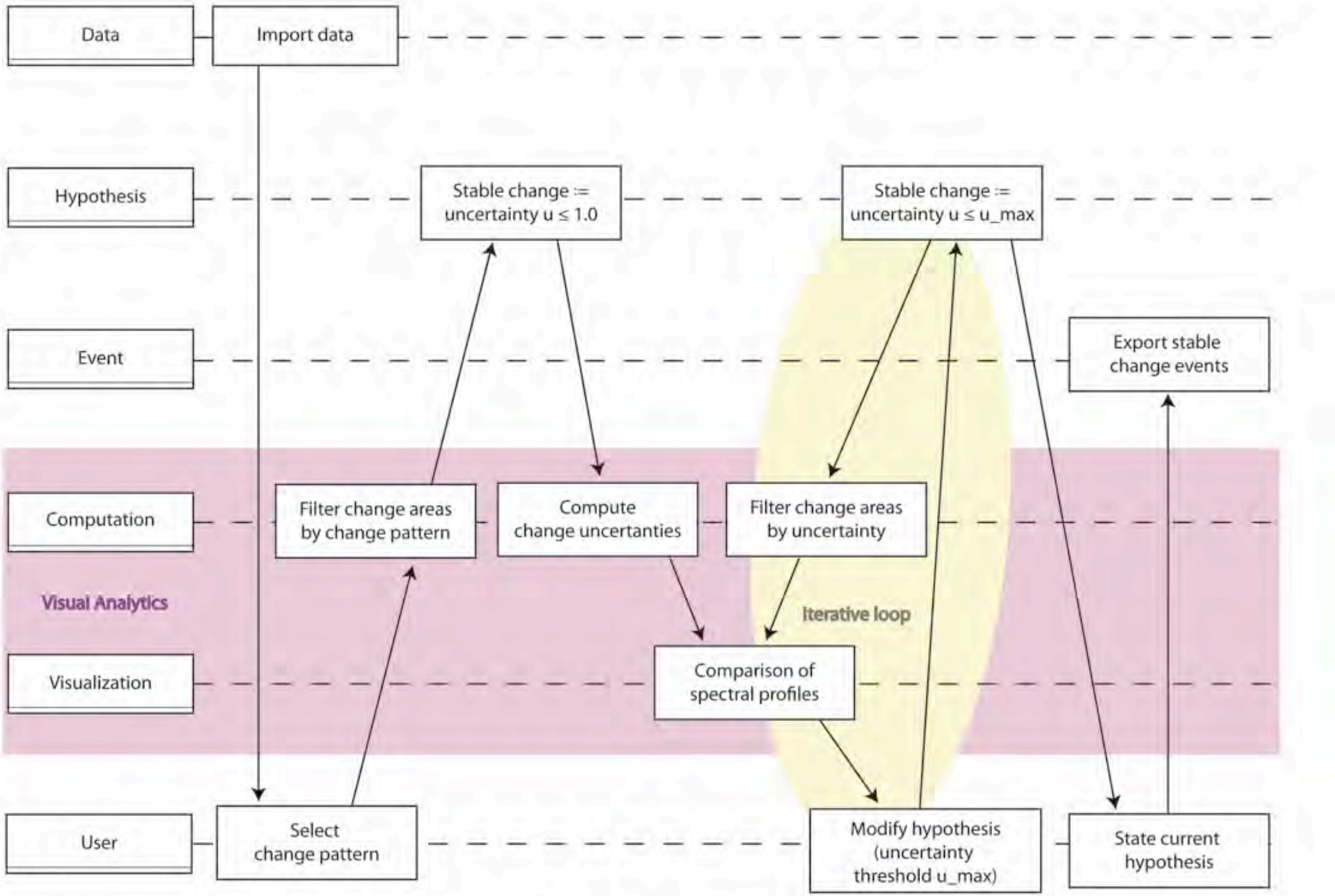
1. Description of change analysis workflows
2. Catalog of suitable visualizations for subtasks

e.g.:
Compare changed areas

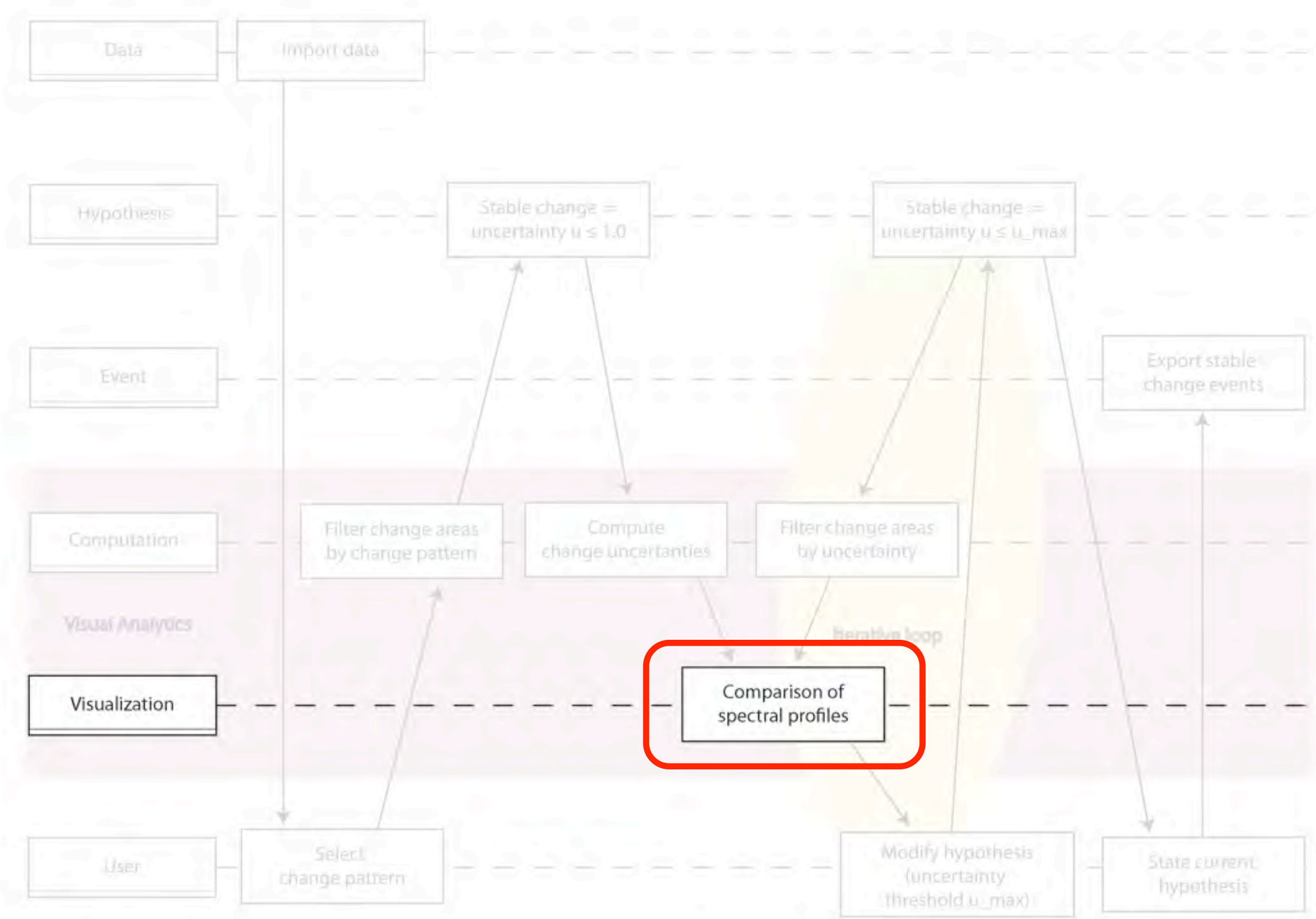
- by size
- by type of change
- by spectral characteristics

➡ Implementation guideline for tool developers

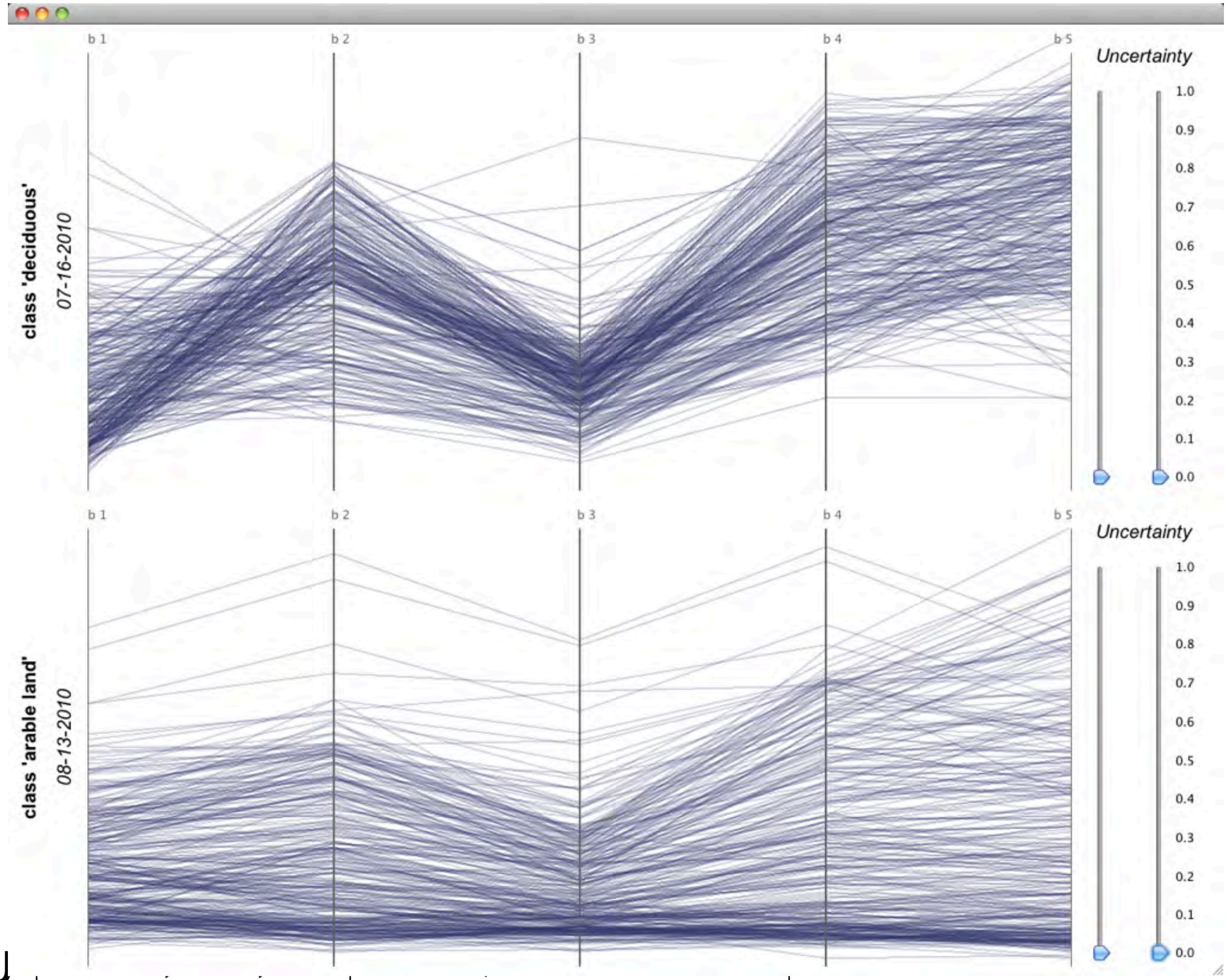
Workflow: Analysis of changes by uncertainty



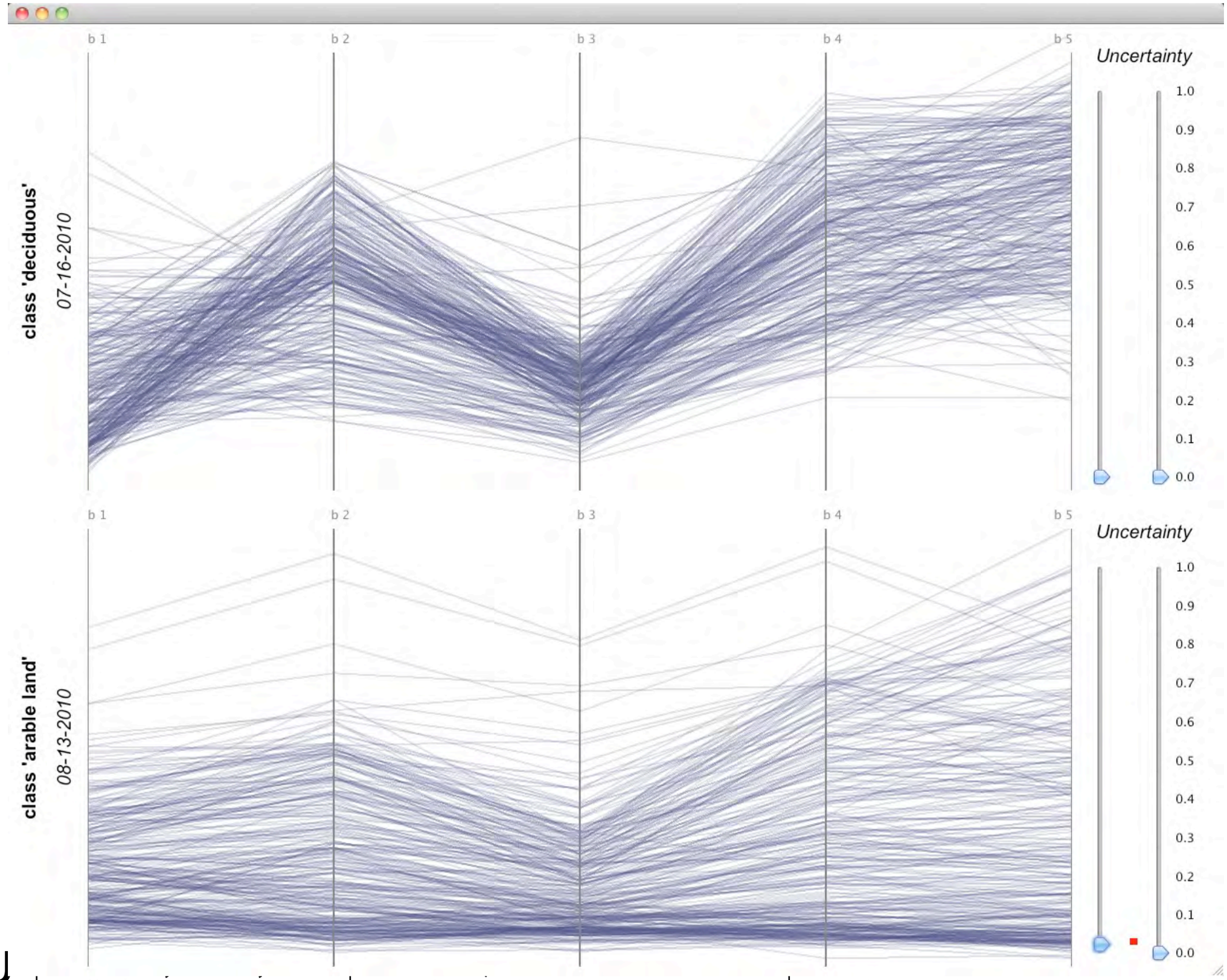
Workflow: Visualization subtask



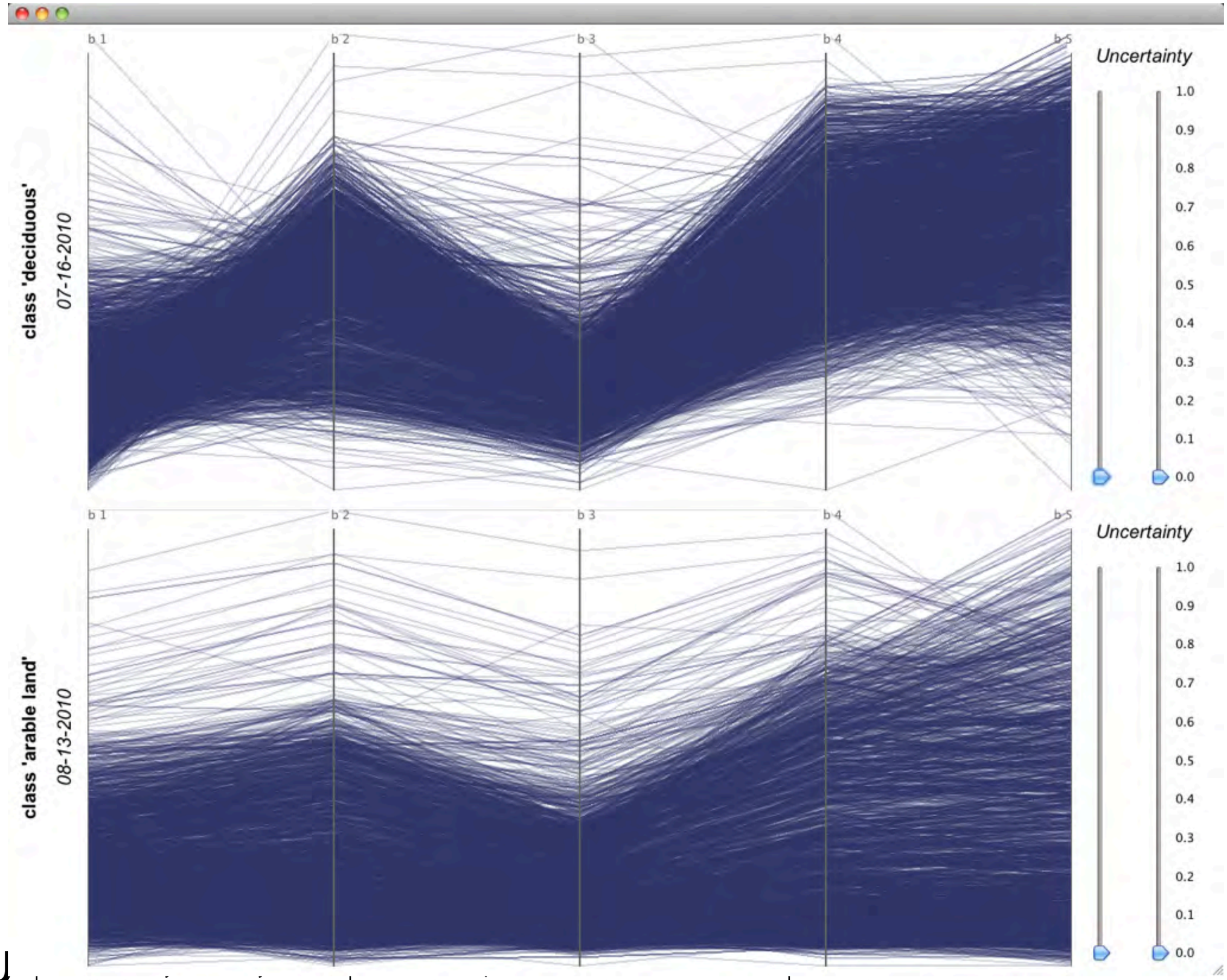
Example implementation: PCP



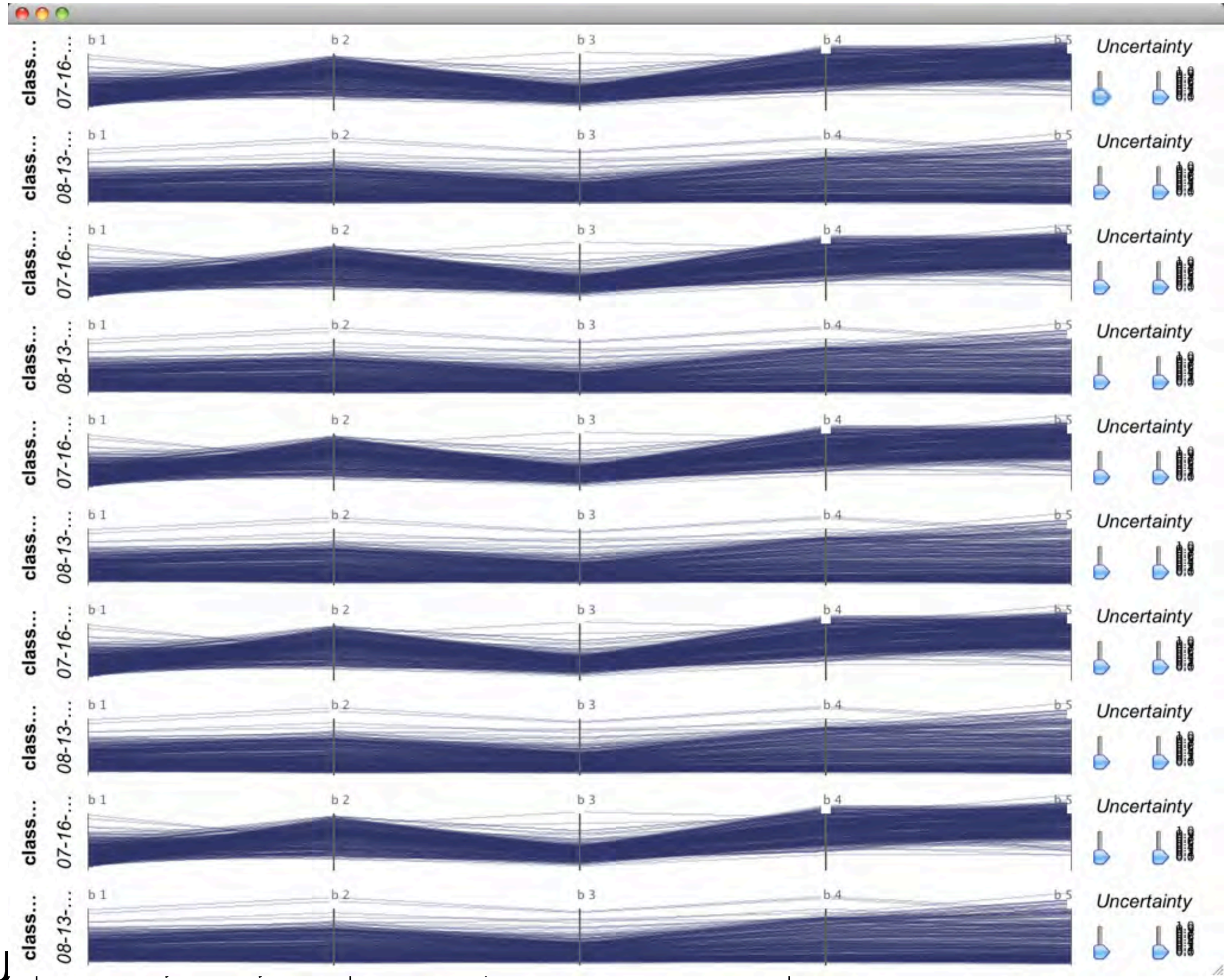
Example implementation: PCP



Limitations: Scalability



Limitations: Temporal Scalability



Which is the most suitable visualization?

- How to evaluate the fitness for use?
- Prototype-based evaluation?

Important issues:

- Spatial Scales
- Temporal Scales

➡ Evaluation concept needs to be developed

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Thank you for your attention!
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