

Euratlas : From historical mapping to historical GIS

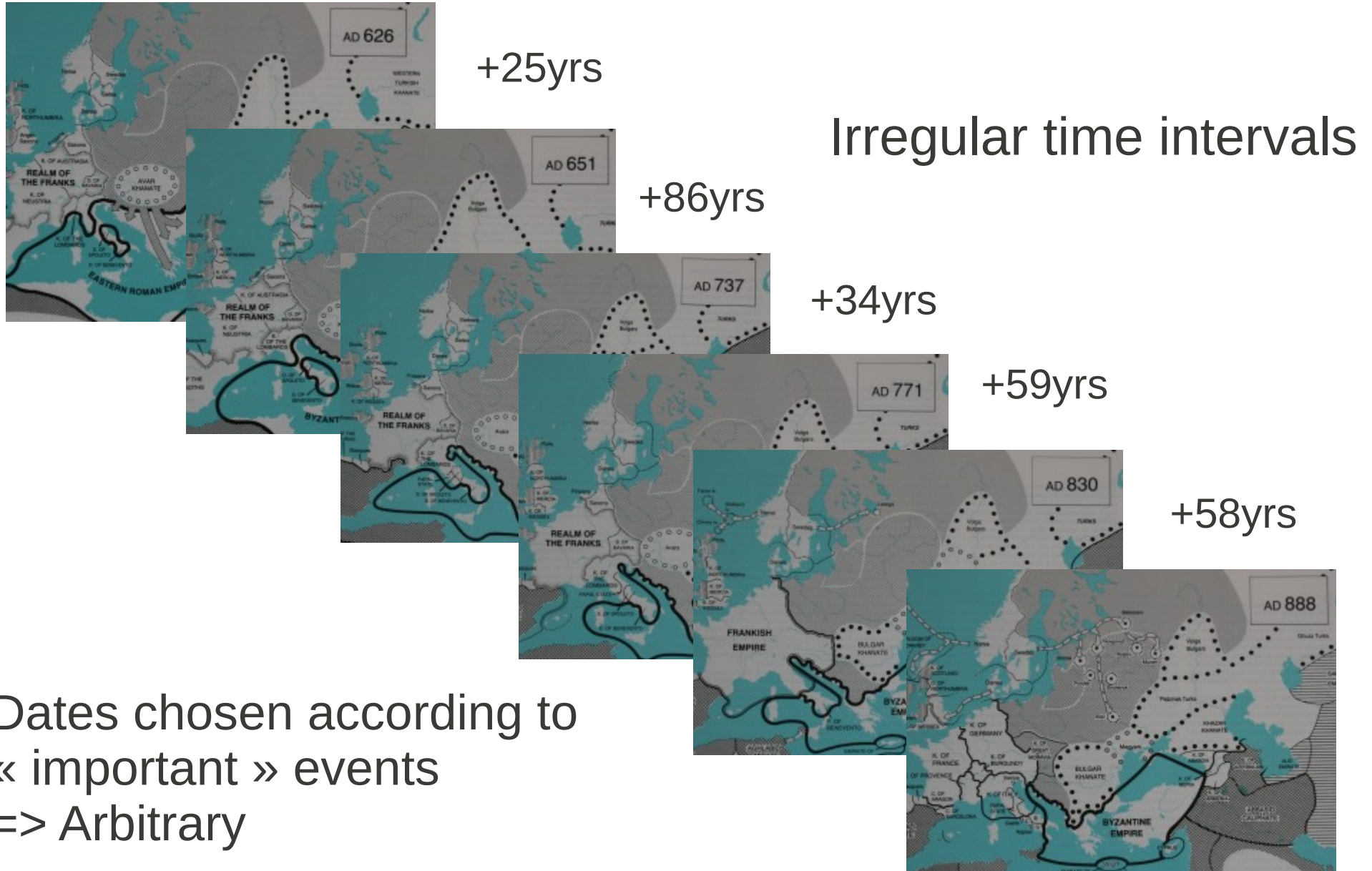
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SSHA 2010

Overview

- Periodical atlas concept
- Electronic historical atlases / Historical GIS
- Euratlas Periodical Historical Atlas of Europe
 - Before : Set of vector maps
 - After : Historical-Geographical database
- Applications
 - End-user historical GIS
 - Scientific usages / analyzes

The New Penguin Atlas of Medieval History



Grosser Historischer Weltatlas



Areas chosen to encompass modern political entities



Multiple dates represented on a single map
=> possible inconsistencies, hard to read

Periodical Historical Atlas

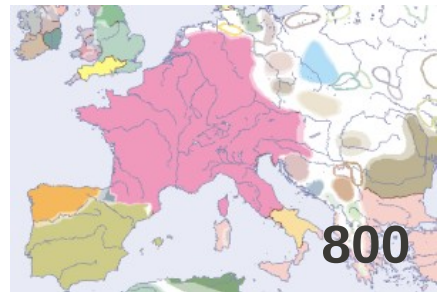
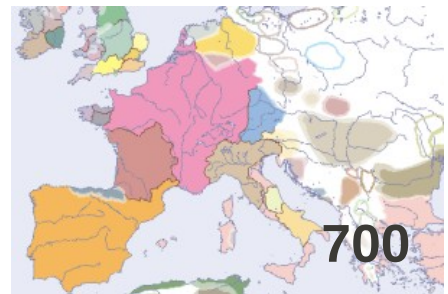
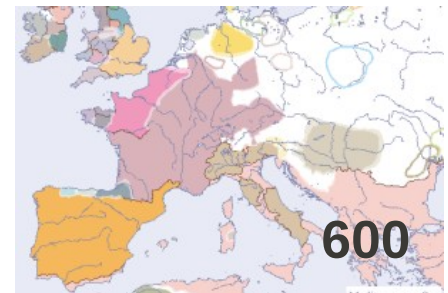
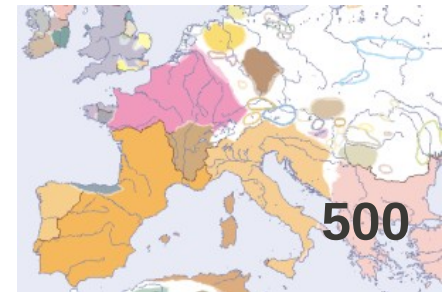
- Concept introduced by Christian Kruse
 - *Atlas zur Übersicht der Geographie und Geschichte der europäischen Staaten (1841)*
- Set of sequential maps
 - Political landscape at specific moment
 - Regular intervals
 - Same geographical area
- Contrasts with usual historical atlases
 - Irregular intervals / arbitrary dates (ex : New Penguin Atlas)
 - No specific time (ex : Grosser Historischer Weltatlas)
- Long-term, global and objective view of history

Electronic historical atlas & Historical GIS

- Bitmap images (ex : digitized paper maps)
 - Information available only to viewer, no structure
 - Zoom limited by resolution
- Vector maps
 - Basic structure : layers, shapes
 - Customizable view, zoom
- Geographical database (Historical GIS)
 - Data-model reflecting real-world
 - Automatic analyzes, combination with other data, interactive visualization, automatic labeling

Euratlas Periodical Historical Atlas

- 21 maps, year 1 to year 2000
 - 2 levels of administrative divisions
 - States and dependencies
 - Autonomous peoples
 - Fuzzy borders
 - Cities of various sizes
 - Physical features (rivers, mountains)
- Europe & Mediterranean basin
- Precision : 5km to 10km
- Vector drawings (CorelDraw)



Euratlas vector maps

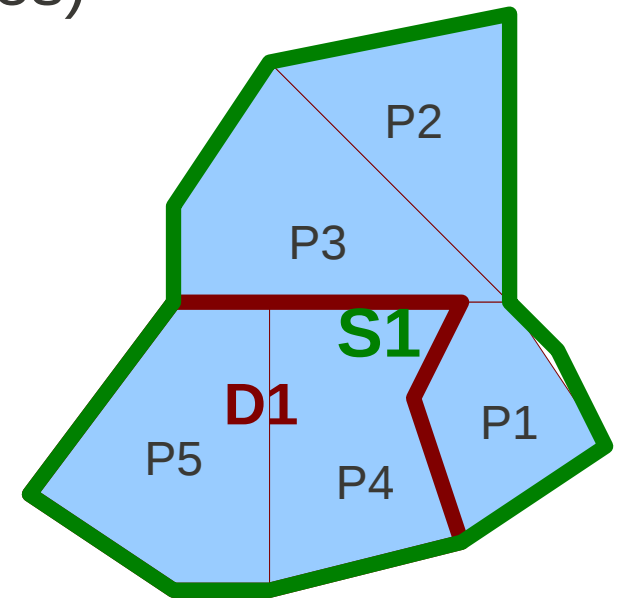
- Countries : colored polygons
- Dioceses / provinces : lines inside countries
- Dependencies : 2-color polygons
- Cities : circles of various sizes
- Seas, mountains : polygons
- Rivers : lines of various widths
- Names layers (duplicated for zoom levels)

From vector maps to geographical database

- Interpret visual elements as data structure
 - Subdivisions boundaries → territories
 - Blend shape → fuzzy border, dependent states
- Data-model
 - Represent accurately political entities in a unified way
 - Simplicity, abstraction
- Names
 - No more on maps but linked to objects
- Georeferencing, map projection

Euratlas Georeferenced Vector Data

- Hierarchy of political entities
 - 2nd level administrative divisions (provinces)
 - 1st level administrative divisions (dioceses)
 - States / Dependent states
 - Supranational entities (HRE and EU)
- Other data (without explicit link)
 - Autonomous peoples
 - Cities
 - Fuzzy borders
 - Physical features : mountains, rivers, seas

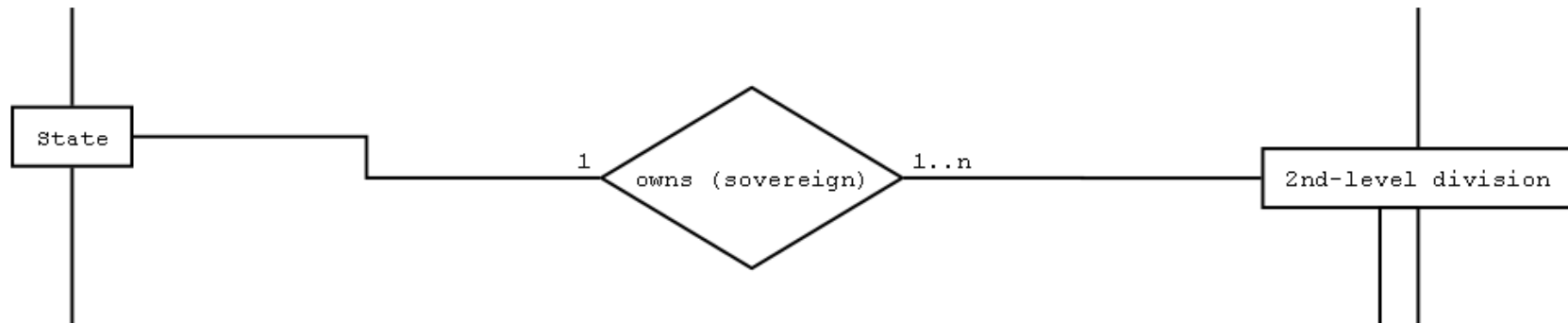


Modeling dependencies

- Provinces may belong to 2 different states
 - Owner (always) – Sovereign state
 - Holder (optional) – Dependent state
- Sovereign state : at least 1 « owned » province
- Dependent state : only « held » provinces



Data model : diagram



Time

- Not really a temporal database
 - Events not represented
 - Static entities at specific moments (century)
 - Data for 21 centuries from year 1 to year 2000
- However, links exist between centuries
 - States ID (color) remains the same
 - Cities ID (location) also remains the same
 - No explicit temporal links for sub-national entities

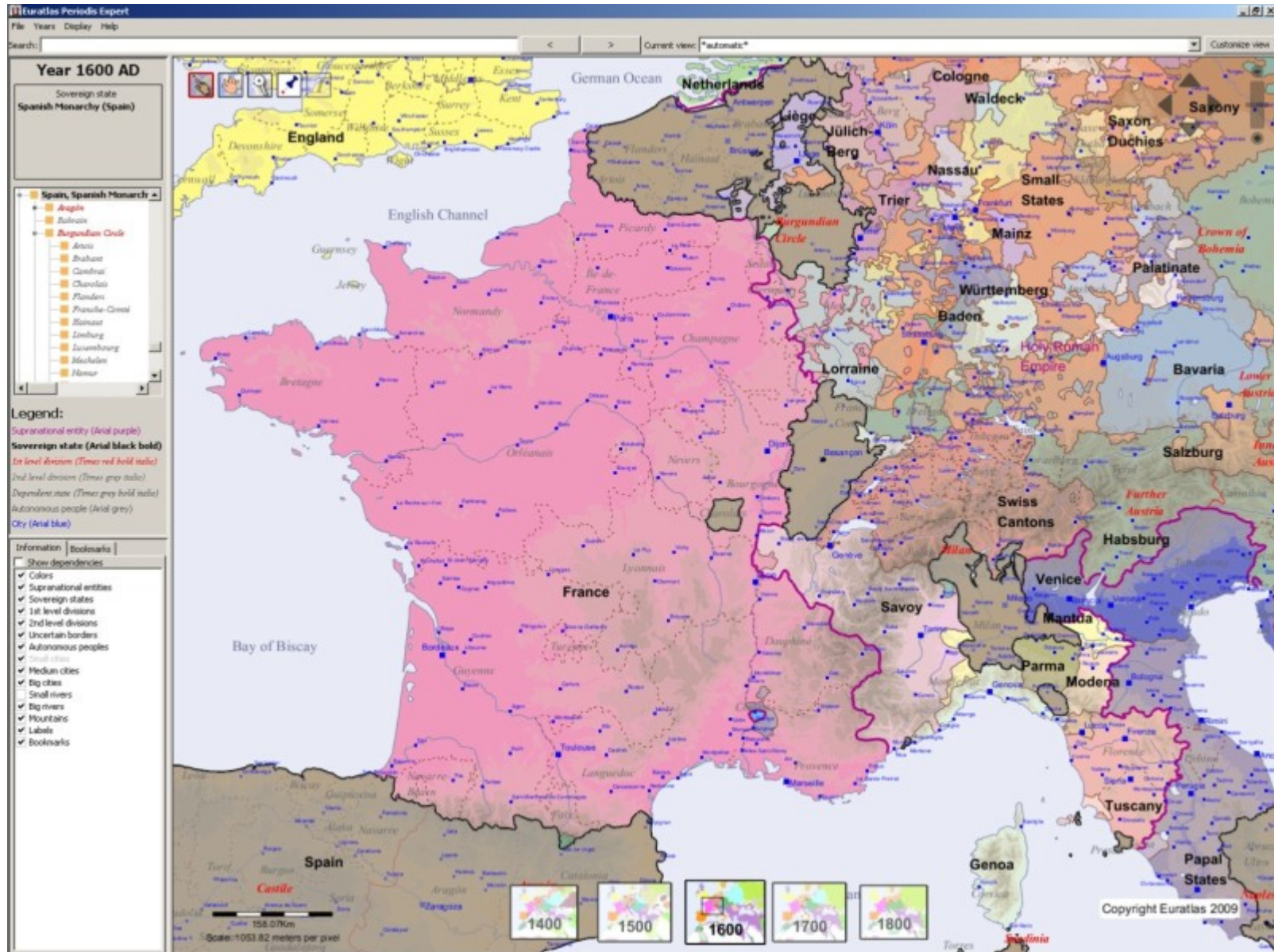
Naming

- All entities/cities have local contemporary name
 - *Kingdom of the Franks* instead of *Carolingian Empire*
 - *Empire of Rhomania* (or *Roman Empire*) instead of *Byzantine Empire*
- Optional :
 - A short form (for labeling)
 - Several variants like modern forms
- Use original characters (except for Arabic)

Applications 1 : Periodis Expert

- Software to navigate through the Euratlas data
- End-user GIS software
- Great flexibility to control data display
 - Independent layers
 - Automatic labeling
 - Scale-free zoom
 - Customizable maps / bookmarks
 - Exportation / printing
 - Advanced search functions

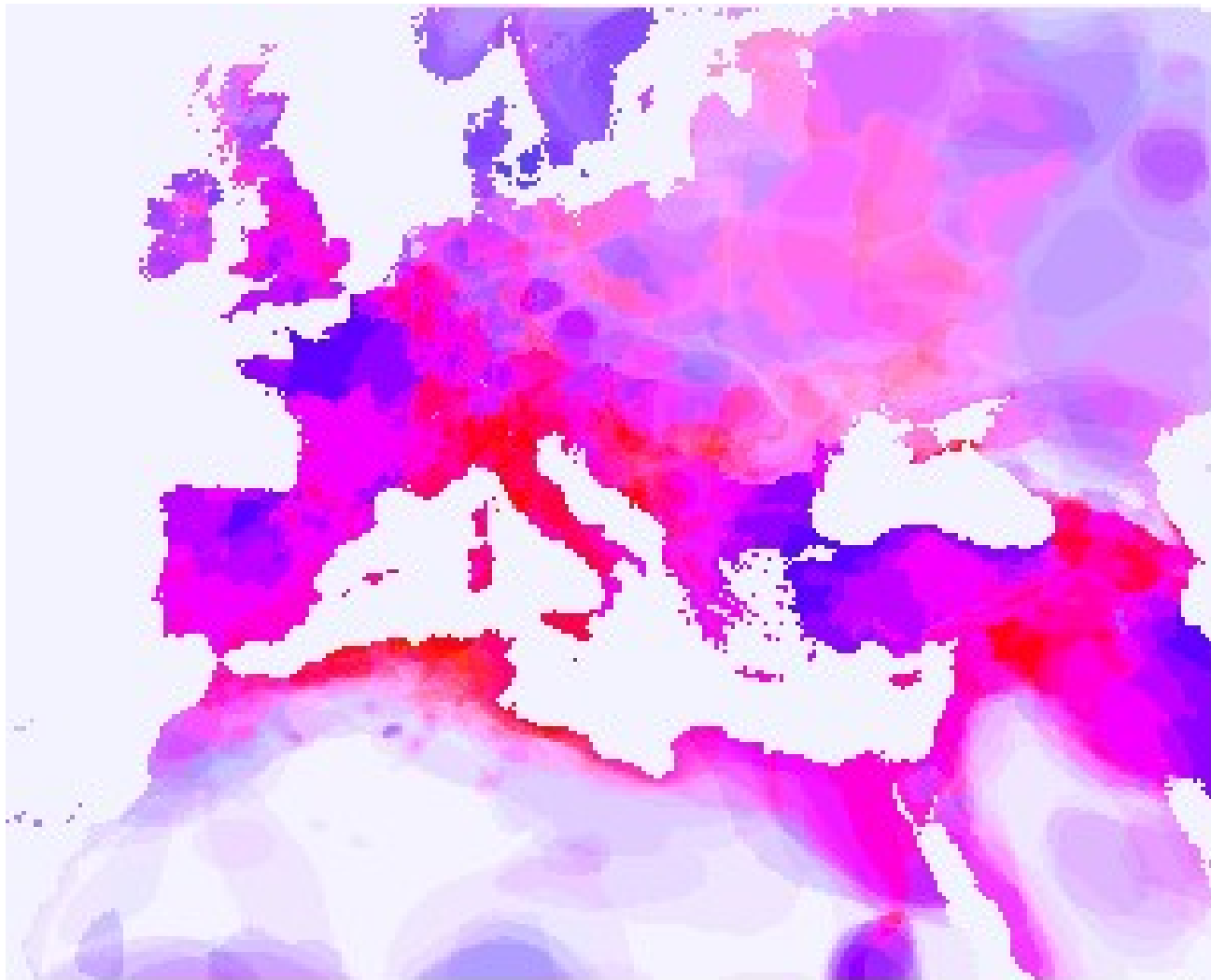
Periodis Expert



Applications 2 : Scientific usage

- Useful data for many scientific researches
 - Simple data model
 - Easy to combine with other data (GIS or not)
 - Ex : history, social sciences, genealogy, criminology, literacy, ...
- History macrodynamics (Cliodynamics)
 - Quantitative analyzes
 - Macroscopic trends

Political stability analysis



Conclusion

- Development of historical GIS from simple maps
 - General data-model to represent all political territories
- Euratlas Periodical Historical Atlas
 - Shapefiles: Euratlas Georeferenced Vector Data
 - General user software: Periodis Expert
 - Free web version: Periodis Web
- Limitations / Future
 - Only one map per century
 - Dependency model too simple
 - Events chronology

Thank you!

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