Making Sense of Environmental Data
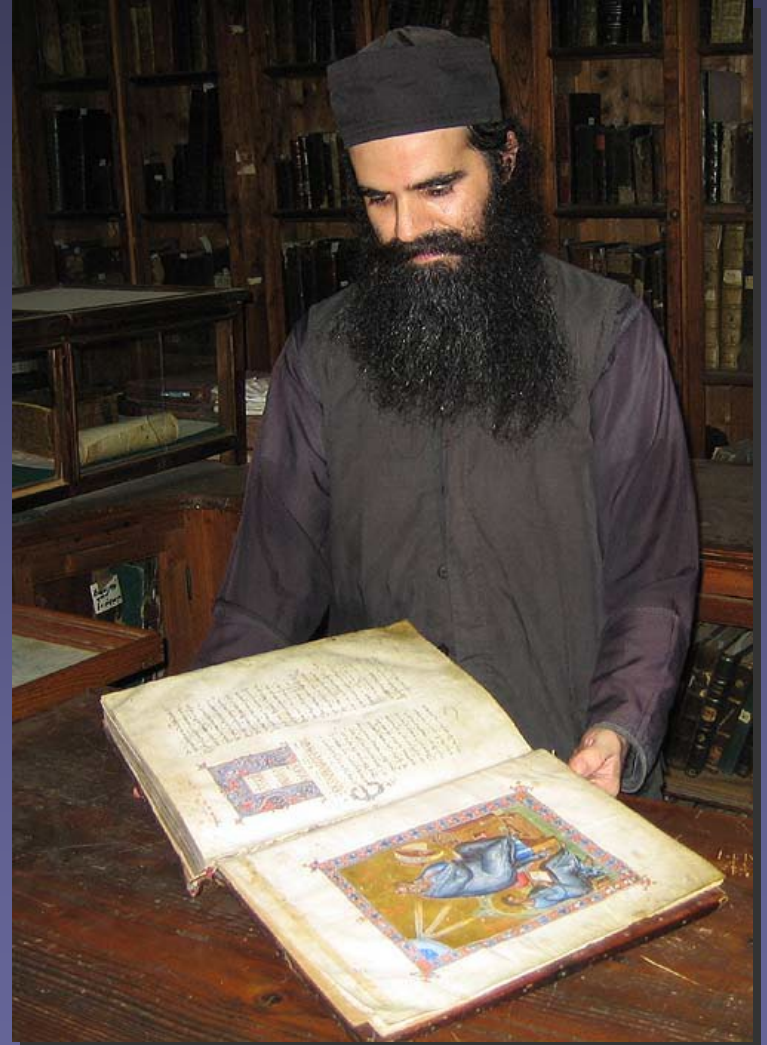

NARA Preservation Conference 2006

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Why Environmental Data?

☒ **Environment is best way to achieve and demonstrate stewardship of collections**

Why Environmental Data?

- ☐ **To inform key institutional functions**
  - ☐ **Facilities management**
  - ☐ **Fiscal management**
  - ☐ **Archival / curatorial**

Environment-Driven Collection Decay Mechanisms

- Chemical change
- Biological attack
- Mechanical damage

Deriving Meaning from T & RH Data

- Algorithms to estimate specific decay risks
- Integrations over time

Chemical Decay (Natural Aging) Metric

☑ **TWPI**

TWPI (Time-Weighted Preservation Index)

- Measure of chemical change induced by heat and moisture

- Typical cause of poor performance: High summertime dew point

TWPI Scale

- Poor: 1 – 45
- OK: 45 – 75
- Good: 75 - 100
- Great: > 100

Biological Decay Metric

- Mold Risk Factor (MRF)

Mechanical Decay Metrics

- **Measures risk due to:**
  - **Moisture content of collections**
    - **Too high**
    - **Too low**
  - **Dimensional changes as moisture content varies over time**

Mechanical Decay Risk Metrics

- **Too dry – Min EMC**
- **Too damp – Max EMC**
- **Too much expansion and contraction – % DC Max**
- **Typical cause of poor performance:**
  - **Winter dryness**

Interpreting Data: Weigh the Risks According to the Nature and Importance of Collections

- Archival & library materials:
  - Chemical, biological
- Fine arts & rare books:
  - Mechanical, chemical, biological

Metrics in Practice

- **At LoC**
  - **Identified underperforming spaces**
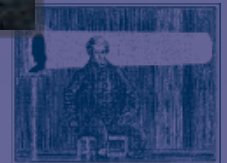 - **Achieved operating improvements**
- **At NYPL**
  - **Helped redirect capital plan for global improvements**
- **At NARA**
  - **Used in DC, Regions**

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Fundamentals of Preventive Conservation

- **Gather and organize information**
  - **Materials and modes of decay**
  - **Storage circumstances**
  - **Present condition**
- **Analyze risks**
- **Take actions to minimize decay**

Prototype of Collection Storage Information System

- Built for National Museum of Denmark
- Shown with permission
- Linked Information
  - Climate
  - Collections
  - Mechanical systems

The Image Permanence Institute
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www.imagepermanenceinstitute.org

www.climatenotebook.org

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