

ILMAX:

A System for Managing Experience Knowledge
in a long-term study
of stream ecosystem regeneration

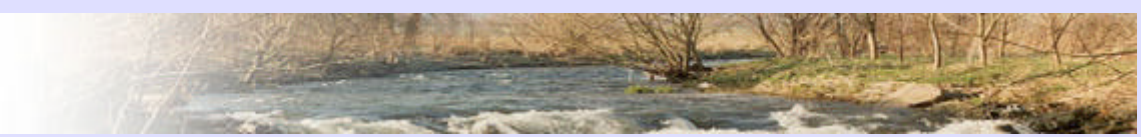
Michael Neumann

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Joachim Baumeister

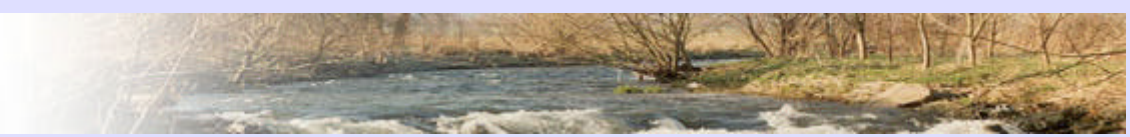
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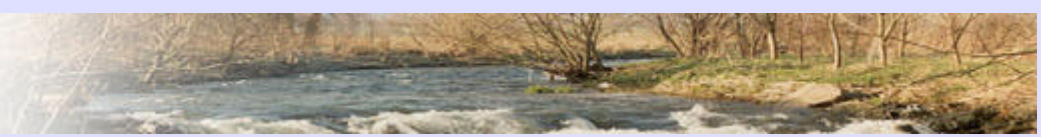
Introduction

- Online content management system
- Developed with iZone
- Collects informal knowledge from a long-term ecological investigation
- Structure, retrieve, and manage the experience knowledge about the regeneration of the river ILM
- Provide new knowledge for conceptual model
- <http://www.ilmax.de>



The river Ilm

- Spring in Thuringian Forest (Thüringer Wald)
- Mouth into river Saale
- 130 km long
- Catchment area 1035 km²
- Normal water at the mouth: 5,9 m³ s⁻¹



Catchment area

Weimar

Thuringian Forest

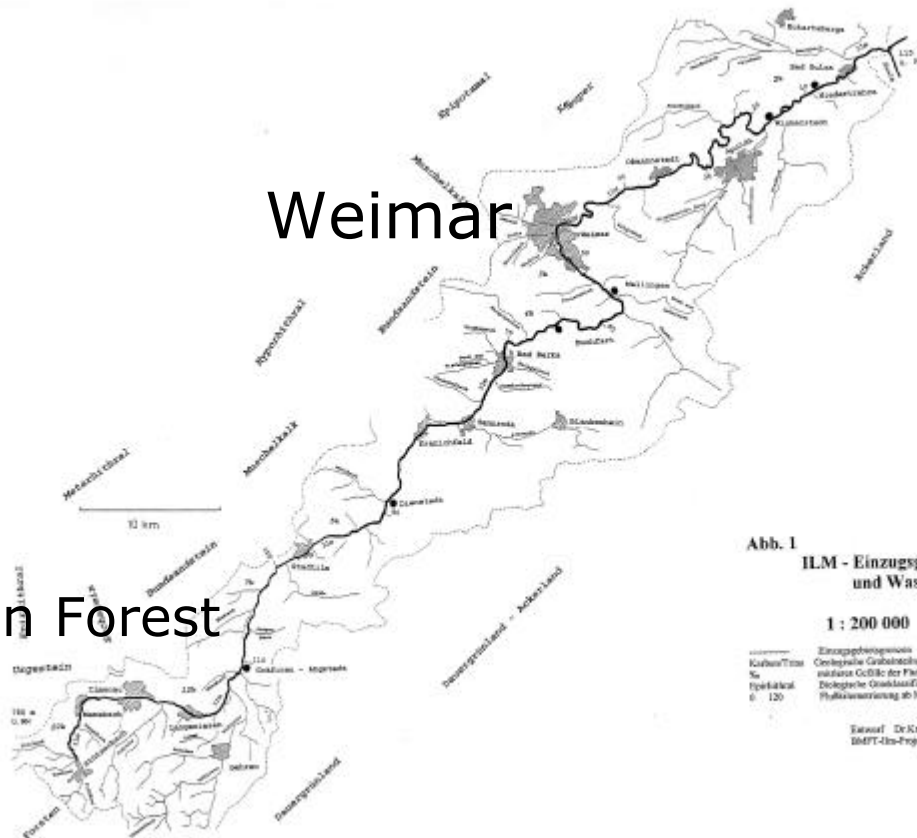


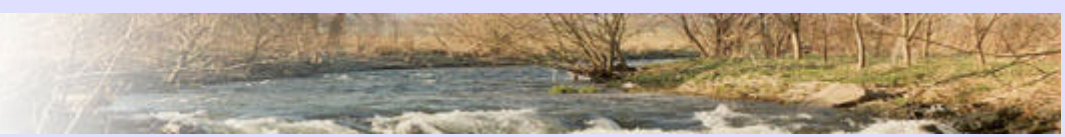
Abb. 1
ILM - Einzugsgebiet
und Wasserläufe

1 : 200 000

Einzugsgebietsgrenze
Karte von 1900
Neuzeitliche Grabungszone
mit den Gräben der Fließgewässer
Deutsche Geographische Gesellschaft
Flusskartierung 40. Jahrgang

Taufel Dr. Krey 1994
IMFT-Ilm-Engel





The available knowledge

- Long-time investigations of the river Ilm by the BMBF-Project (1991-1994) and the Graduated Research Group (1996 – 2005)
- Contamination
- Degradation
- Disturbance

Weir
Low Morph. Structures
Non-Point Sources
Point Sources
Floods

1200 mm a⁻¹

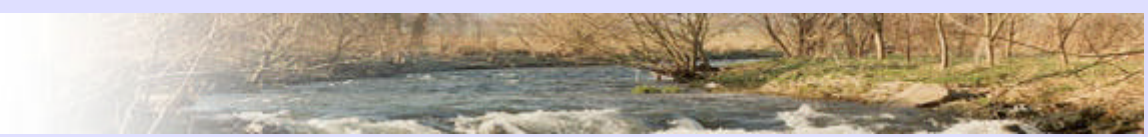
Abb. 1
ILM - Einzugsgebiet
und Wasserläufe

1 : 200 000

Einzugsgebiet
Kultur/Tiere
%
typischer
e: 120

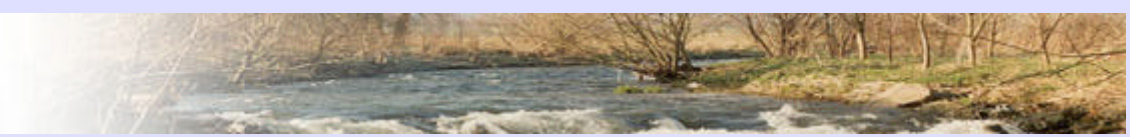
Einzugsgebiet
Geologische Karte
mittlere Gd. d. Pflanzens
ökologische Gd. d. Pflanzens
Pflanzens

Fotograf. Dr. Krey 1994
IMFT-48-Engel



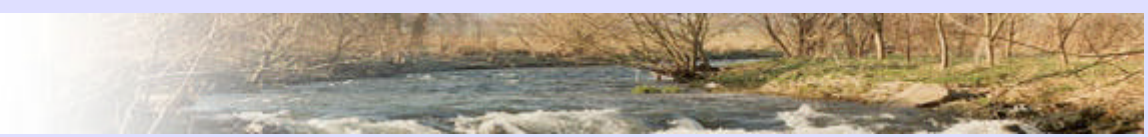
The available knowledge

- Long-time investigations of the river Ilm by the BMBF-Project (1991-1994) and the Graduated Research Group (1996 – 2005)
- Contamination
- Degradation
- Disturbance
- Status of the ecosystem
- Situation is improving dramatically since the reunification of Germany
- Regeneration of the ecosystem



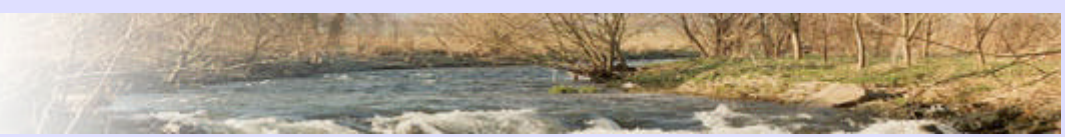
Problem

- Data and knowledge partitioned from 21 PhD studies since 1991
- Content informally available as text documents, scientific figures, data sheets, multimedia files, or expert knowledge
- Need a tool to support storage, retrieval, and visualization
- Integrate scientists that left the project
- Content should be available to everybody involved in the project



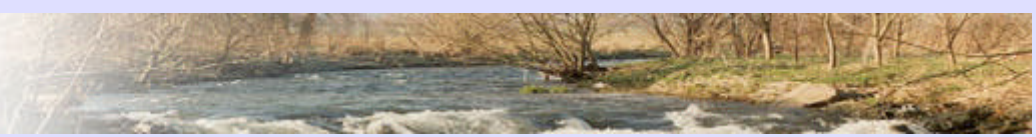
Community aspects

- Online, access via internet
- Common user interface
- Personalized, login for all participants
- Initializing phase with a knowledge champion
- Authoring online or offline
- Validation of content
- Rating the usefulness of content
- Commenting or annotating of content
- Push-facility to notify by email



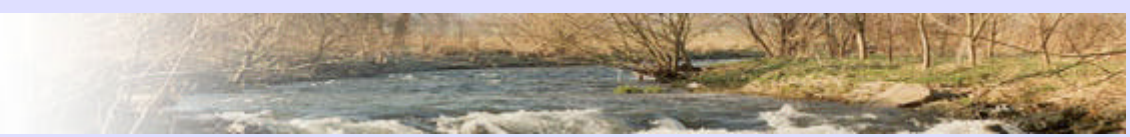
Organizing heterogeneous content

- Conversion of content to standard format is time consuming
- Enrich content with meta-information for retrieval purpose
 - Categorization
 - Summary
 - Keywords
- Index of authors; lexicon for terms and synonyms



Organizing high level content

- Integration of data bases and expert knowledge as a special kind of content
 - data stored in data bases: viewing, editing, and indexing
 - knowledge-based systems: viewing, running cases, inferring solutions, extending the knowledge base
- Active linkage to other content
- Knowledge management system



Information retrieval



- Easy and intelligent retrieval
- Browsing
 - Within the tree-structure
 - Heterarchical categories
- Searching
 - Words, boolean connectors, weights
 - Automatic generation of word vectors
 - Result ranked to degree of conformance
 - Requested words are highlighted

Online content management system iZone

[Erweiterte Suche](#)
disturbance
[Hilfe](#)

[Inhalte](#) [Autoren](#)
Inhalte

- ILM-Pictures
- ILM-Stream
 - Disturbance
 - Organism
 - Fauna
 - Testaceen(Protazoen)
 - Diversity depending on disturbances
 - Succession of colonization
 - Makrozoobenthos
 - Caddis fly
 - May fly
 - Driftpattern of the genus Baetis by a weireffect
 - Recovery after disturbance
 - Abundance of benthic evertbrates (study site Buchfart)
 - Flora
 - Discharge
 - Chemical-Water-Quality
 - Morphological-Structures
 - ILM-Floodplain
 - ILM-Catchment
 - Soilerosion
 - Characteristics
 - ILM-General-Facts
 - Testordner

 [Startseite](#)  [Hilfe](#)  [Autoren](#)  [Email](#) 

[Startseite](#) [Hilfe](#) [Abmelden](#) [MyZone](#) [Lexikon](#) [Druckversion](#) [Kommentar schreiben](#)
Administration: [Templates](#) [Benutzer](#) [Kategorien](#) [Zugriffsstatistik](#)
Autorensystem: [Bearbeiten](#) [Ausschneiden](#) [Löschen](#)

Sie sind hier: [Inhalte](#) > [ILM-Stream](#) > [Organism](#) > [Fauna](#) > [Testaceen\(Protazoen\)](#)

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Diversity depending on disturbances

conceptual modellings show that the maximal medial diversity is reached by a time span of 40 days in between two disturbances; the character of the riverbed effects the maximal diversity, depending on the intensity of floods;

Basiert auf den Arbeiten: **Vetter (2001) Störungen und Ihre Auswirkungen auf die benthische Lebensgemeinschaft - ein Modellansatz für drei Organismengruppen am Beispiel des Fließgewässers ILM; Dissertation an der Universität Jena; 135 S.**

Beitrag erfasst von **Cindy Tefs**
Beitrag online seit **24.10.2002**

 [PDF 143KB](#) Ein Beitrag von **Mona Vetter**

Benutzer, die dieses Dokument lesen, betrachteten auch:
[Floods](#), [Size](#), [Saprobry](#), [General-Informationen](#)

[Zum Seitenanfang](#)

Weiter:  [Succession of colonization](#)

Bewertung
Sie können hier den nebenstehenden Artikel bewerten:

1 - sehr gut

Dieser Artikel wurde bisher noch nicht bewertet.

Kommentare
Bisher wurden **keine Kommentare** verfasst.
[Kommentar schreiben](#)

 Document: Done (0.631 secs)

Search in iZone

[Startseite](#) [Hilfe](#) [Abmelden](#) [MyZone](#) [Lexikon](#)

Erweiterte Suche

[Hilfe](#) [Experten-Suche](#) [Kommentar-Suche](#)

Suchmaske:

3 ▾

4 ▾

+ ▾

+ ▾

+ ▾

suchen in:
Auswahl:

allen Kategorien ▾

Inhalte
Autoren

Suchoptionen:

☐ Stemming einschalten
☐ verwandte Begriffe anzeigen
☐ Teilwortsuche ausschalten

☐ nach Synonymen suchen
☐ nur im Titel suchen
max.

alle ▾


 Treffer anzeigen

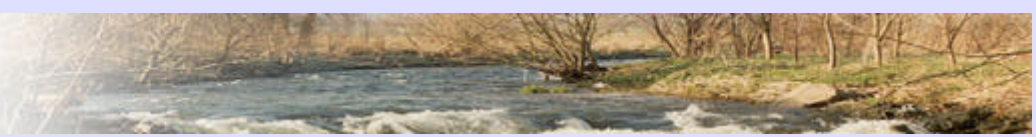
Suchen

Es wurden 2 Dokumente gefunden

Suchergebnis:

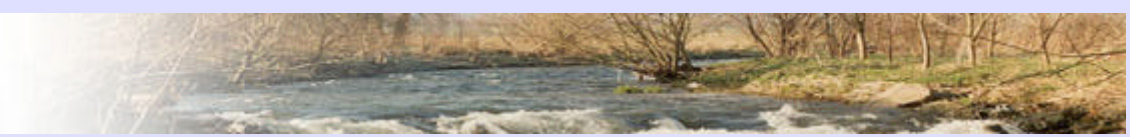
Sortieren nach: Rel. Bew. Pop.

1.	 Recovery after disturbance	92%	--	0
	Pfad: Inhalte/ILM-Stream/Organism/Fauna/Makrozoobenthos/			
2.	 Diversity depending on disturbances	49%	--	3
	Pfad: Inhalte/ILM-Stream/Organism/Fauna/Testaceen(Protazoen)/ Benutzer, die dieses Dokument lasen, betrachteten auch: Saprobry , Floods , General-Informationen , Frequency of Highwater			



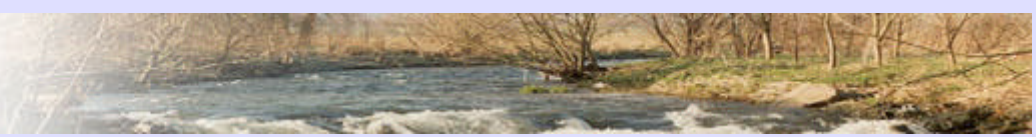
Further use of knowledge

- Merge pieces of knowledge
- Incremental formalization of knowledge
 - Rules and conditions
 - Quantitative and qualitative Relations
 - Correlations
- Develop conceptual models or qualitative reasoning models
- Discover new conceptual ecological knowledge about the functioning and regeneration of degraded stream ecosystems



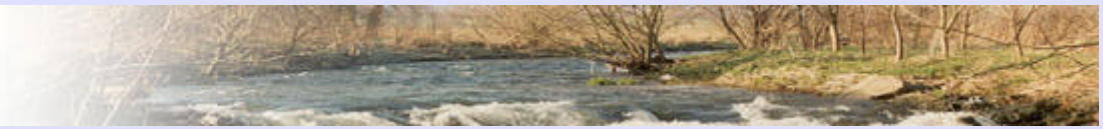
Summary

- Long term investigation of the recovery of river ILM
- Informal knowledge from separate investigations
- Structure this knowledge
- Formalize this knowledge and use it for qualitative reasoning



Conclusions

- In long-term ecological research projects the use of online content management systems can help to store, retrieve, and visualize experience knowledge
- The internet facilitates the process of knowledge capturing
- We recommend the start with a knowledge champion
- The knowledge can be used by all involved scientists
- The formalized knowledge can be used for an advancement



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