Ocean Exploration and Research (OER) Video Portal: A Video Data Management Success Story

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Video Data Management Overview

• NOAA's Office of Ocean Exploration and Research collects large volumes of video from deep submergence systems
• OER partnered with NCEI to investigate methods of video data management
• Outcomes
  – an easy data access portal
  – long term archival solution
  – ISO video metadata templates
  – Best practices, methods and tools
Session Focus

• This session will focus on two main video data management themes:
  – Demonstration of NCEI’s operational video management solution for OER video
  – Discussion of best practices, methods and tools

• Resources
  – https://www.ncddc.noaa.gov/oer/video
OER Comparative Data Metrics

Total Volumes (GB) of OER Data Types Managed (2001-2016)

- Geophysical Data: 2,516 GB (1.7%)
- Oceanographic Data: 490 GB (0.3%)
- Water Column Sonar Data: 3,687 GB (2.4%)
- Okeanos Explorer Video: 32,230 GB (21.2%)
- Documents and Legacy Video: 113,000 GB (74.4%)

Total Volume: 148 TB
Okeanos Explorer Video Capture (FY10- FY16)

- 284 ROV Dives
- Maximum depth: 6,000 meters
- Over 1,700 hours of video (1,400 hours on bottom)
- 42,264 video segments clipped for preservation

**Video Clips (145 Mbps)**
- Broadcast Quality (ProRes)

**FinalCut Pro Compilation Project**
- Dive / Cruise Highlights
- (145 Mbps) (ProRes)

**High Resolution video highlights**
- High resolution (10 Mbps)

**“Low” Resolution video Clips**
- web streaming (1.5 Mbps)
Okeanos Explorer Video Capture (FY17- >)

Telestream technology | New Annotation Software | Adapting workflow

**Telestream Video** – sourced from ROVHD only divided into 5 min segments and saved in low-res segments

- Telestream: Full-length Broadcast Quality (145 Mbps, 1080i, ProRes 422 SQ)
- “Low” Resolution video segments - web streaming (1.5 Mbps)

**EVS Instant Replay System** – sourced from deck cameras, hand-held cameras, control room cameras, non-ROV cameras

- Video Clips (145 Mbps) - Broadcast Quality (ProRes)
- FinalCut Pro Compilation Project - Dive / Cruise Highlights - (145 Mbps) (ProRes)
- High Resolution video highlights - High resolution (10 Mbps)
- “Low” Resolution video Clips - web streaming (1.5 Mbps)
NCEI Project Implementation

1. User discovers video through metadata catalog search

2. Low-Res Video retrieved & previewed from NCEI archive

3. Full-res order placed; ftp link returned to user email

Machine-to-machine interface (M2M)

Full-resolution video storage

Archive for Ocean Information

- Underwater Video as Data
- Climate Database Modernization Project
- NOAA Photo Library
Tools and Information Flow for Video Metadata

- ISO Metadata Templates
- Sampling Operations Database Application
  - Based on Time Stamps of Video Segments, Annotations extracted from:
    - Chat Log
    - Event Log
    - Embedded video metadata
    - X,Y,Z,T of Vehicle
    - Environmental sensors on vehicles
    - File naming convention of video segments

Extraction Routines

CIMS
- Cruise Plan/Data Mgt Plan
- Standard Vocabularies
- Specific Theme and Place Keywords
- Post-Cruise Dive and Video Details

ViMS
- XML File for Dive and Video ISO Metadata
- Low-Res Video Segments File Sizes

Geoportals
- ISO Metadata for Dives
- ISO Metadata for Video Segments

OER Video Portal
- Search and Discovery
- Low-Res Video Preview/Download
- Full-Res Video Ordering

Publish cruise metadata
Publish dive metadata

data.gov
My interests are focused on video of gelatinous zooplankton in the benthic boundary realm, especially at depths greater than 1000 m.

Any environmental data obtained by the ROV would be useful to support studies of behavior (swimming, feeding, breeding, predator avoidance, dispersal) and ecology (presence, distribution, abundance).

Dr. Marsh Youngbluth – 2012 data request
Demonstration
NCEI / OER Video Data Portal

www.nodc.noaa.gov/oer/video/