Group C: Topic 2 Summary

Working Environment / Work-Flow Requirements

Can a better job be made to show where core non-recovery occurred in a given core?

Need access to operations database (tool depth, penetration rate, torque on bit) - recorded based on time.

Need to translate this to depth to map it to the core CoreWall should display this as a bar graph.

Logging-while-coring data in real time.

Applications to Andrill, IODP, Ice, Lakes, HSDP.

Workflow - What Happens to the Core?

"On the catwalk":

Top of core is the only reference - uncurated core lengths.

IR Thermal; Imaging

Interstitial Water sampling

Head space gas

Gas samples

Microbiological sampling.

Core Catcher - base of core.

Need a place holder for this in CoreWall - data added later.

Data other than age taken for Andrill and MSP (pore water, Geochemistry).

Workflow - What Happens to the Core?

Whole Core Data

Circumference Imaging/Slices;

Thermal Conductivity;
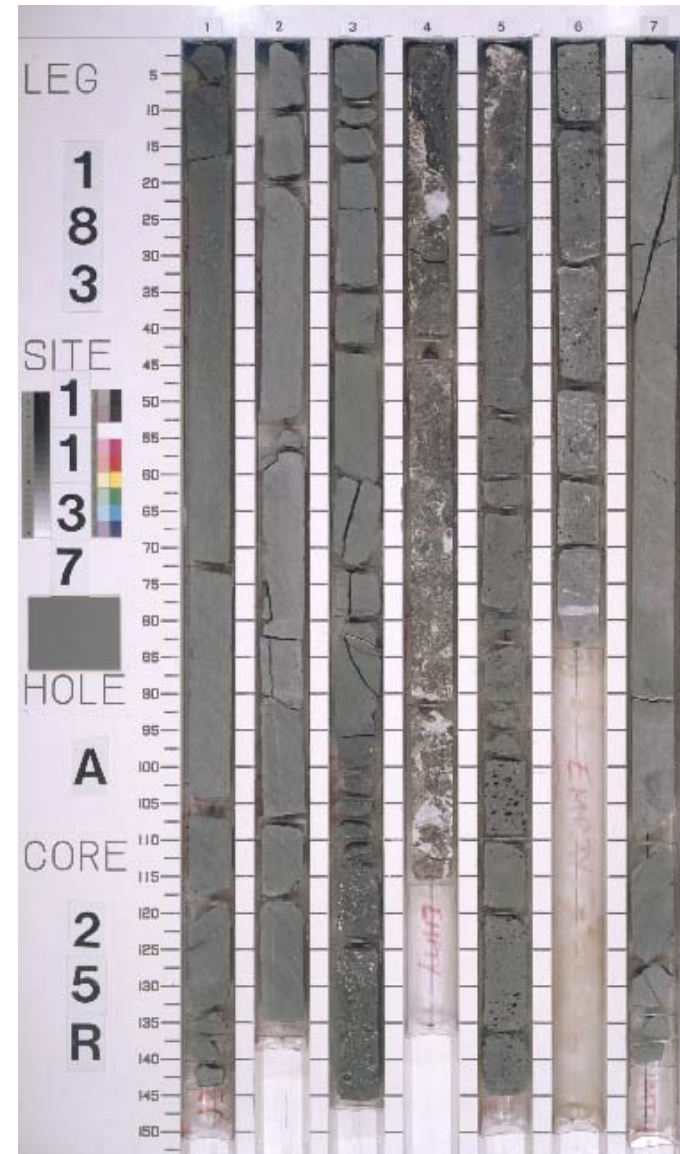
Velocity;

Non contact resistivity;

Paleo-magnetism;

X-ray CT Scans;

Whole-core imaging (DMT: hard rocks);

Linear X-ray scans;

MRI, NMR, Gamma density;

Logging data: (FMI/FMS, Natural γ, etc.).

Workflow - What Happens to the Core?

Split Core Data (Archive/Working)

Visible imaging (400-700 nm) (both halves)

Multispectral imaging (200 - 2500 nm) (both halves)

Paleomagnetics (U-channels if necessary)

Surface mapping (laser altimetry, confocal imaging)

Phys. Props.

Core Description

CoreWall could be the portal for entering the description to the respective IO database?

May be some synergies with J-CORES open-source java version for data entry Tablet PC, drawing/annotating, pull down lists, etc. Have Tablet PC located on CoreWall image - put descriptions in at relevant areas.

Workflow - What Happens to the Core?

Core Description

Structure, Lithology, Fractures, Surface Features;

Sample locations: Smear Slides, Thin Section, Geochemistry

Need unique sample number/location so data generated can be added later.

Scan working half core after sampling - see where samples were taken.

For paper drawings, descriptions, CoreWall needs to be able to display files scanned into different IO databases at the correct locations.

CoreWall needs to be able to display data entered into IO databases.

CoreWall Issues

Would CoreWall be used for drilling decisions? Pre-expedition, during expeditions;

Where physically would you put CoreWall?

Use to help with other tools (i.e., photomicrographs)?

What is conference room configuration?

How can you view stuff on shore from data on the ship?

What is LIMS system for LacCore - is it a CoreWall workflow database?

CoreWall needs to know where you are in some frame of reference (coordinate grid) see multiple depth scales simultaneously (MBSF MCD) one main scale, others potentially discontinuous.

Which depth scale? Plot all and be able to normalize to any one of them in real time.

CoreWall Issues

Can CoreWall facilitate paperless core description?

    Does the computer slow you down?

    People entering data on paper and then transferring it to the computer = duplication of effort?

    If paperless, core description via CoreWall needs to be easy - point-and-click capability, pull-down-menus.

    If paper used, it needs to capture details that enhance (not duplicate) core description (e.g., sketching of features/structures, etc.). These notes need to be scanned in and attached to CoreWall as PDF/text/audio/video annotations.

    Would need graphical libraries and extensive dictionaries.

    Voice recognition.

    User friendliness is the key.

CoreWall needs to support/enhance DESCINFO, J-Cores, etc.

CoreWall Issues

CoreWall should read sample place holder information from LIMS (or equivalent) and be able to retrieve data added for individual samples at a later date.

IODP can have a new core coming up every 15 minutes can be 80 cores behind.

However, it is data collection/description that takes the time - not CoreWall!

Converting all the depths and building the splice can take time want all the data mapped to depth quickly *Splicer* takes time - people wont be splicing with imagery for real-time drilling decisions.

A'a Flow   Ragged Vesicles
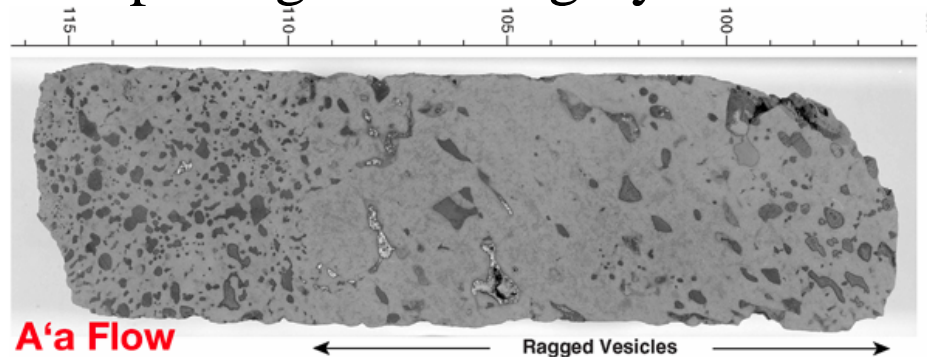
Potential Bottlenecks/Limitations

Temperature equilibration;

Natural gamma activity;

Use of Splicer or CoreClip(?) for drilling decisions;
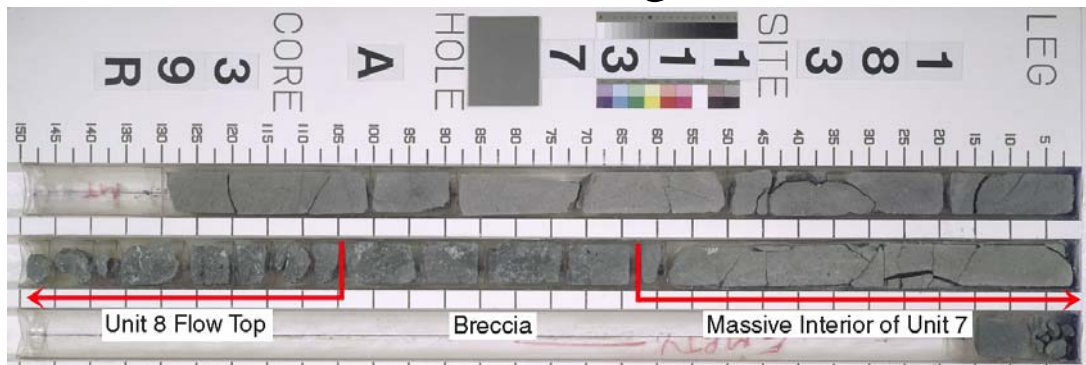
Rendering time for images;

Scalability;

Screen size/graphics cards;

Ergonomic issues - human-computer interface;

Tools for data entry/analysis/interpretation;

Use is cold environments (e.g., freezer for ice).

Unit 8 Flow Top   Breccia   Massive Interior of Unit 7

Issue 3: Hard Rock / Sediment / Ice

All could use volumetric (virtual splitting/slicing) scanning w/ CT/NMR, etc.

Real time vs. asynchronous usage - how much IT/Communications at the drill site?

Asynchronous as delayed synchronous;

Ideally when a new core is available *Corelyzer* is notified and auto loads it.

Liner / no liner in all 3 - no difference;

Difference in sizes that are drilled - data acquisition problem;

Age / depth transformations - basically the same.

All three need seemless scale transformations:

Depth --> Strat. Age --> Absolute Time

Issue 3: Hard Rock / Sediment / Ice

Smear Slides and Thin Sections:
      Acquire / store / access;
      Smear Slides not being saved or scanned much these days;
      Would like to have an image database.

Archive for thin section images exist - CoreWall needs to be able to capture and annotate it to show where you got certain data.

Treat slide like a core section:
      lots of meta-data;
      accuracy is critical (pixels and cm in x and y);
      access through LIMS;
      25x25mm -? 5mb file - 1200 x 1200 pixels??
      would like to zoom and view them like the core.
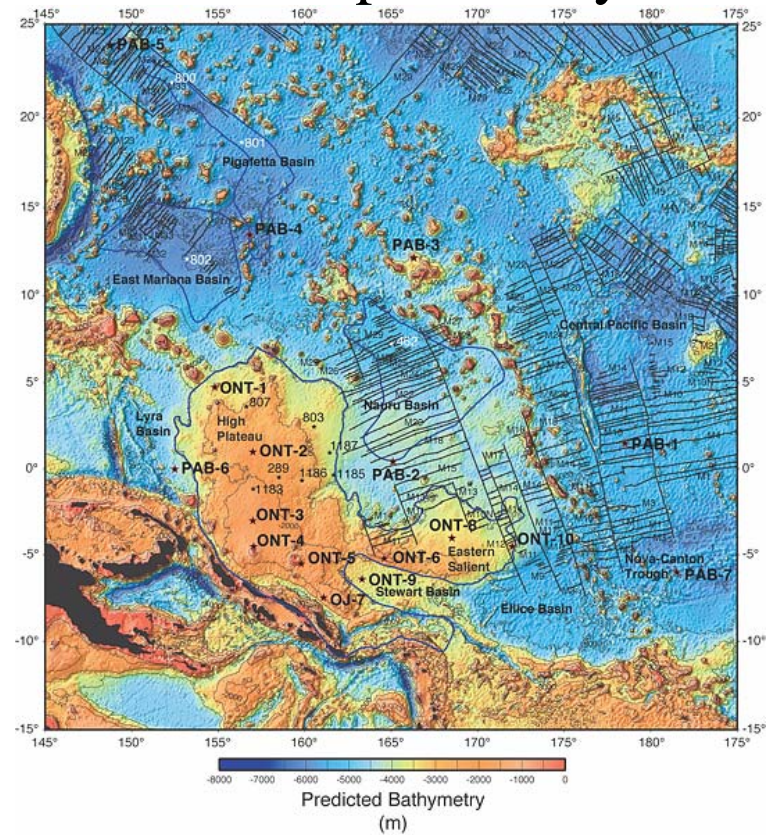
Issue 3: Hard Rock / Sediment / Ice

Use of older data in site surveys to plan future work and while out doing current work;

Instead of pulling physical cores you could view the digital versions;

Great for writing future drilling proposals to re-visit previously cored areas;

Great for science party orientation during transits.

Allows greater accessibility to cores and associated data.

Predicted Bathymetry (m)

IODP Minimum Measurements

biostratigraphic	done on JR
visual core description	done on JR
smear slides/thin sections	done on JR
split-core digital photography (section line-scan and/or table layout)	done on JR
core logging: natural gamma ray, gamma ray attenuation, magnetic susceptibility, p-wave velocity	done on JR
moisture and density/porosity (discrete samples)	done on JR
if downhole logging program: natural gamma ray, spectral gamma, density, porosity, resistivity, sonic, borehole imaging, checkshot	done on JR
temperature (equilibrium temperature estimation using downhole probes or open hole measurements)	done on JR
other ephemeral props: (expedition specific)	dependent on measurement