ICRP C5 Ongoing Activities & Research Priorities

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Past Experience / Future Work

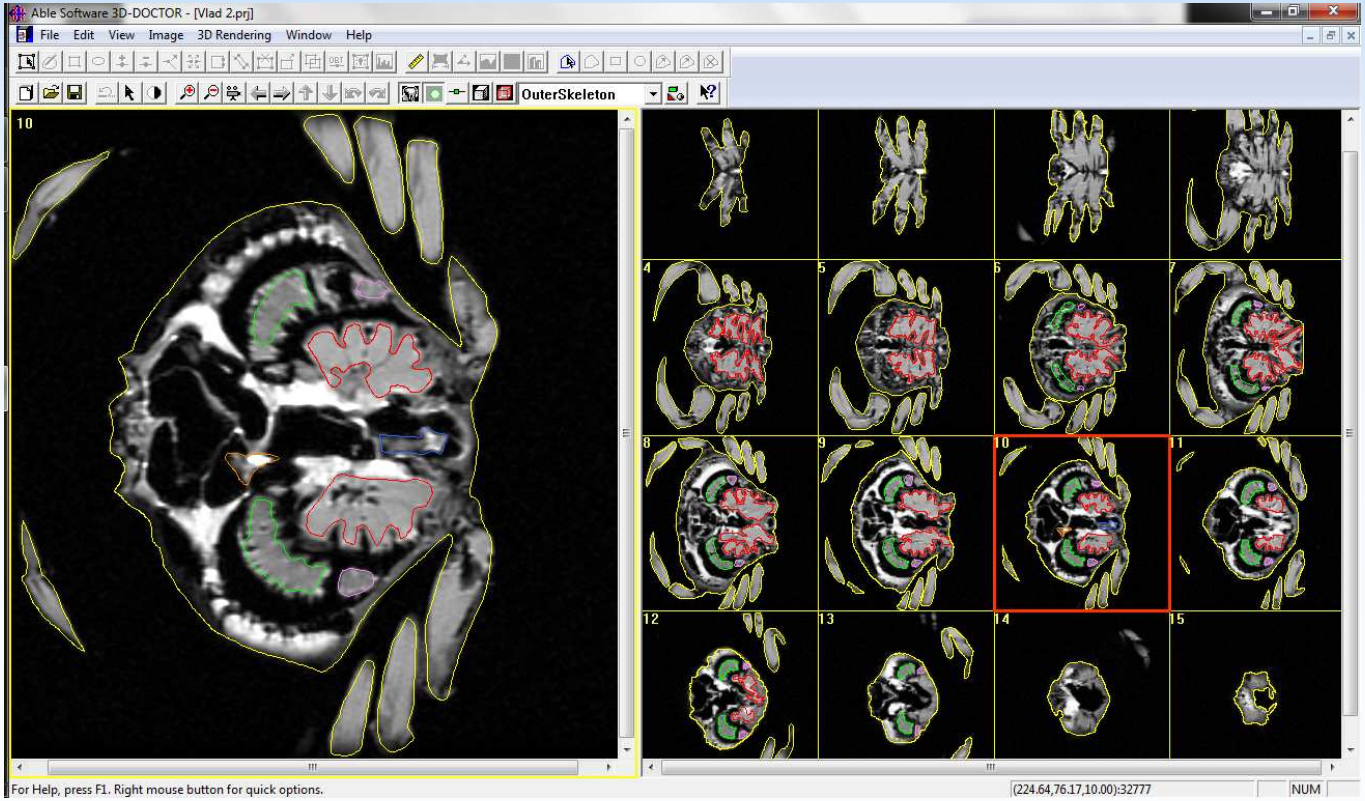
- Past efforts identified data and process gaps
- Activities initiated *because* of ICRP:
  - Voxel phantoms (partitioning of radionuclides)
  - Dynamic transfer modelling (moving away from steady-state assumptions) e.g., emergency & pulsed systems
  - Spatial/temporal factors in dose
  - Filling RAP-specific effects data gaps
- Testing DCRLs in light of new data and their proposed application

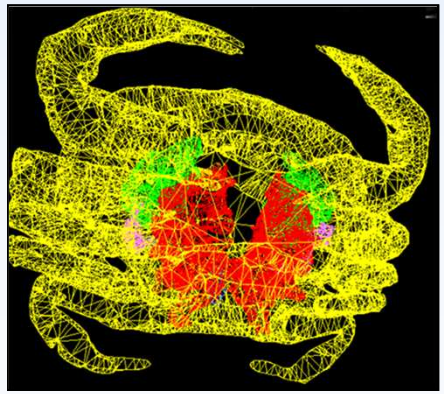
Looking ahead

Consolidation of system and data bases

- Extrapolating from RAPs to Reference Organisms for use in assessments. Outline of report structure developed.
- RAP monographs. Compilation of data on biology, life cycle, stable element ratios, exposure scenarios (incl background), transfer factors, effects, (dynamic) models, conclusions.

Looking ahead
RAPS monographs

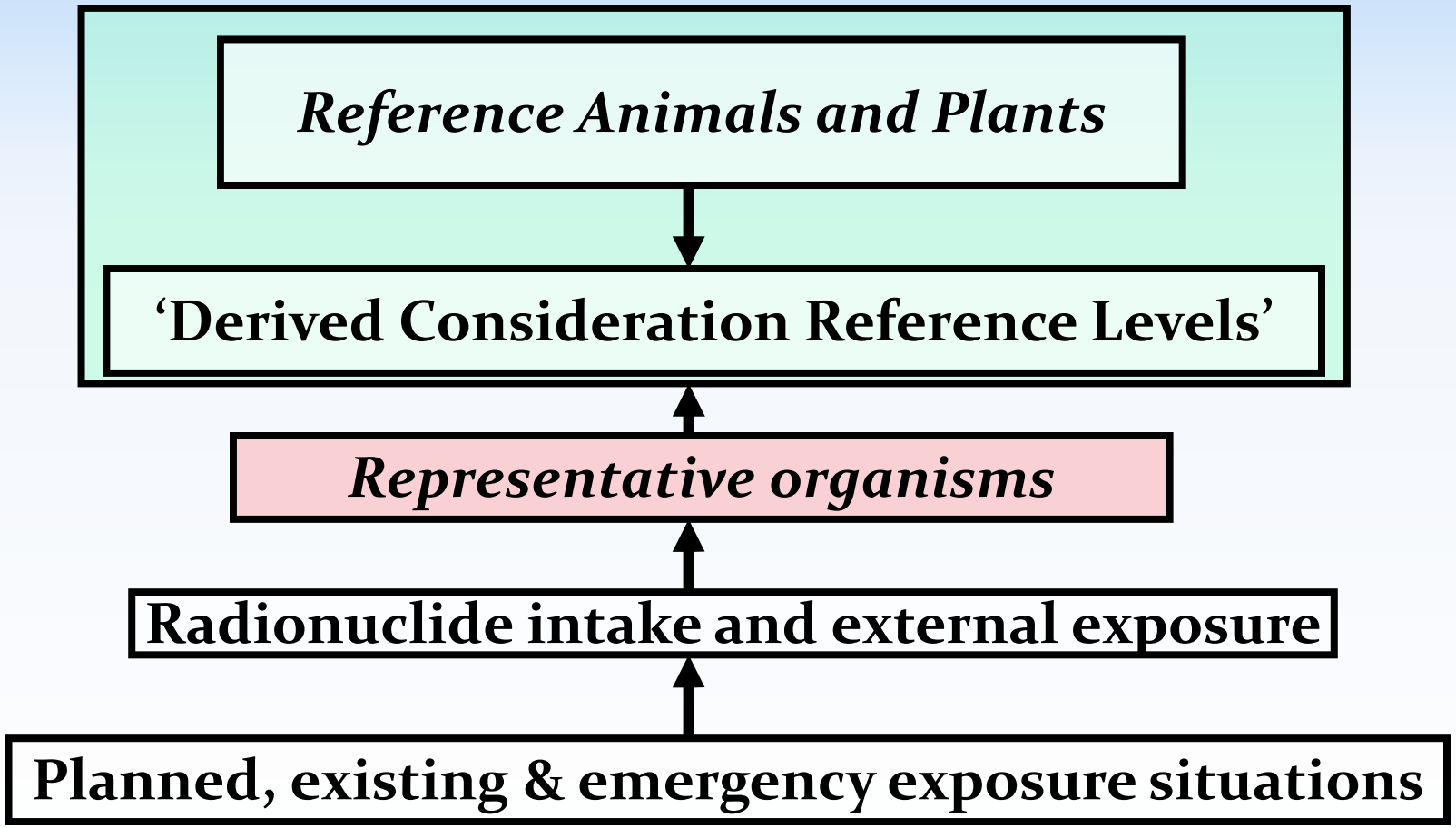




Vlad the crab

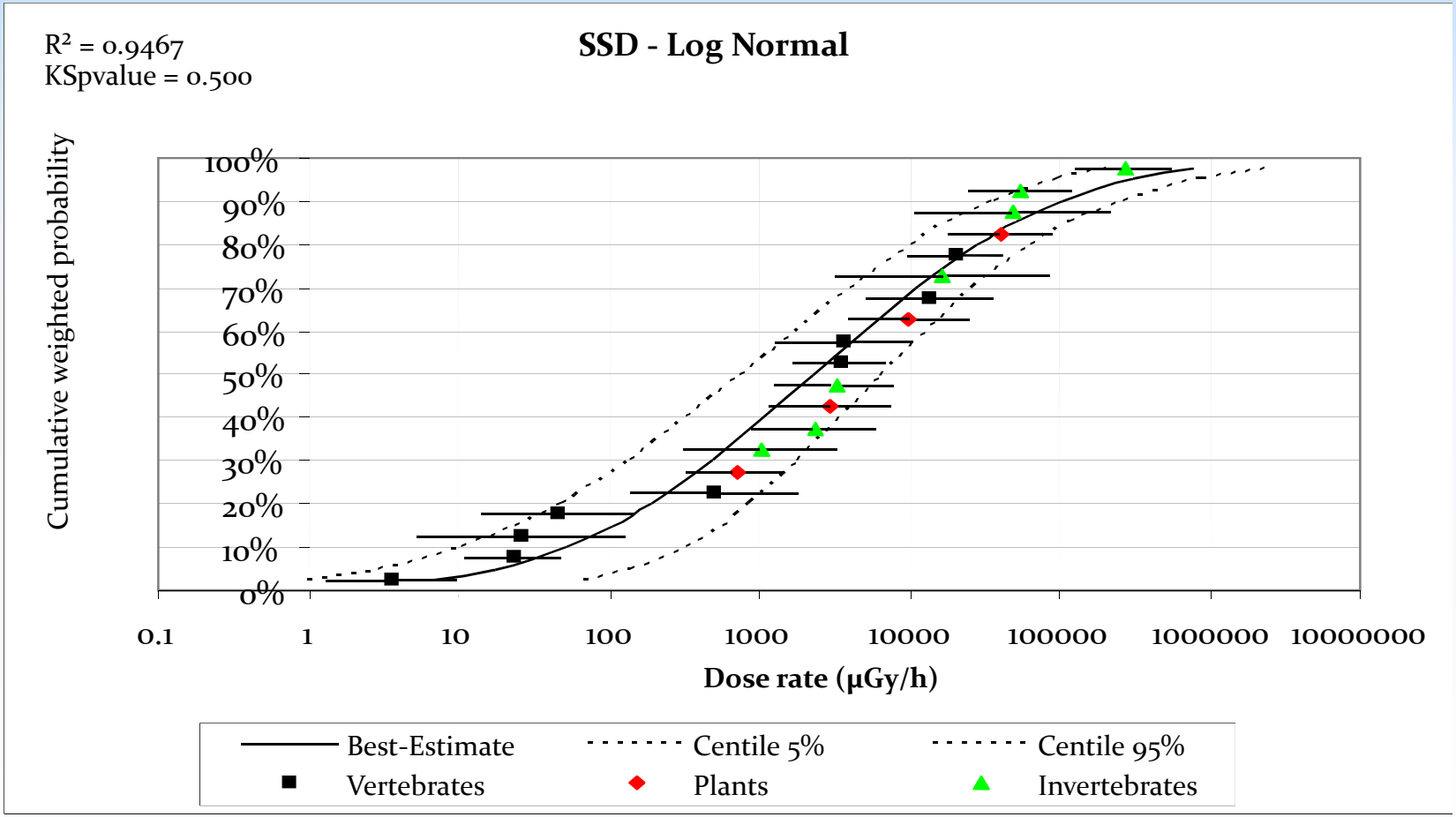
Looking ahead

Application



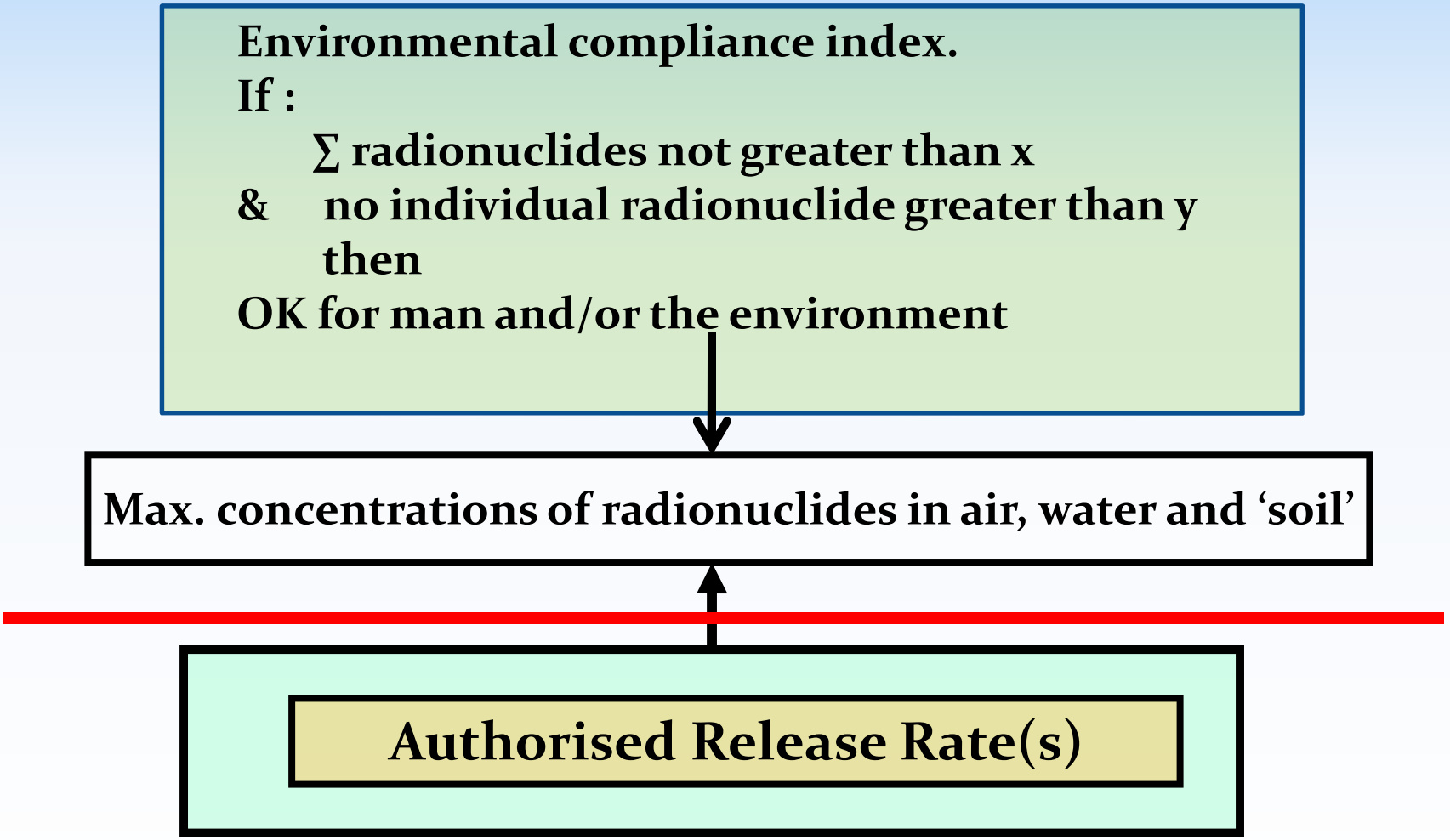
Looking ahead

Species sensitivity



Looking ahead

Develop/Test Under Various Scenarios:



ICRP C5 Path Forward

- Consolidate existing protection system
  - Fill data gaps and complete ongoing activities
  - Expand databases and biological understandings of RAPS (monographs)
- Derive environmental concentration values from DCRLs in order to guide assessments for
  - Mining of radioactive ores
  - Nuclear facilities
  - Waste management
- Provide guidance of situation specific derivation of databases for representative organisms
- Expand population/ecosystem dynamics

Research Areas of Interest to C5

- C5 does not carry out research – but identifies areas of interest and/or need to others
- Transfer and dosimetry
  - Characterization of background dose rates
  - Determination of the relationships between the external concentrations of radionuclides in the surrounding media and those within organisms
  - Standardization of the methodology used to develop transfer factors
  - Mechanism underlying the higher concentration of radioactive nuclide (e.g. Cs) in fresh water fish than sea-water fish

Research Areas of Interest to C5

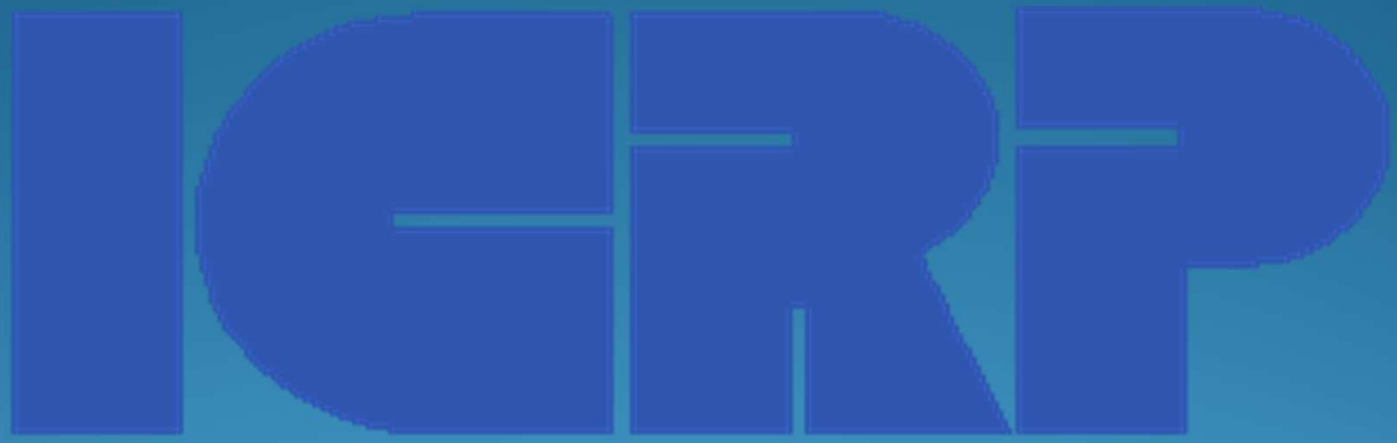
- Transfer and dosimetry (cont'd)
  - Application of voxel phantoms
  - Dosimetry of plants
  - Dependence of transfer factors on type of soil
- Biological effects
  - Comparison of radiation effects on vertebrate embryonic development in relation to dose and dose rate
  - Relationship between dose rate and total dose
  - Effects of dose/dose-rate on populations within the same environment
  - Effects of radiation on embryos and adult reproductive capacity

Research Areas of Interest to C5

- Biological effects (cont'd)
  - Biomarkers for exposure of biota
  - Population level deterministic endpoints
  - Consequences of long-term trans generational exposure
- Other
  - Ethical protection issues; are there evolutionary costs associated with radiation stressed environments

Conclusion

- Looking ahead:
  - Consolidate existing protection system
  - Derive environmental concentration values from DCRLs
  - Provide guidance of situation specific derivation of databases for representative organisms
  - Expand population/ecosystem dynamics
- Past efforts identified data and process gaps
- Research activities initiated *because*, but *outside* of ICRP
  - Transfer & dosimetry
  - Biological effects
  - Ethical issues



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