

Figure 4. from

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```
/ (Root)
├── metadata ..... [Scalar Datasets]
│   ├── voxel_size_m, frequency_hz .....double
│   ├── bulk_density .....double
│   ├── seed, nx, ny, nz .....int
│   └── timestamp .....string
├── grid ..... [Coords]
│   └── x, y, z .....double [N]
├── materials ..... [Definitions]
│   └── names, group .....string [M]
├── fields ..... [Volumetric]
│   ├── physical ..... [3D Datasets]
│   │   ├── rho, phi_intr .....float (ny,nx,nz)
│   │   └── granularity_index .....float (ny,nx,nz)
│   ├── em ..... [3D Datasets]
│   │   ├── eps_eff_real, eps_eff_imag .float (ny,nx,nz)
│   │   ├── sigma .....float (ny,nx,nz)
│   │   └── tan_delta, skin_depth_m .....float (ny,nx,nz)
│   ├── thermal ..... [3D Datasets]
│   │   ├── kappa, Cp .....float (ny,nx,nz)
│   │   └── diffusivity, inertia .....float (ny,nx,nz)
│   ├── mechanical ..... [3D Datasets]
│   │   ├── bulk_modulus, shear_modulus.float (ny,nx,nz)
│   │   ├── cohesion, friction_angle ...float (ny,nx,nz)
│   │   ├── youngs_modulus .....float (ny,nx,nz)
│   │   └── poissons_ratio .....float (ny,nx,nz)
│   ├── seismic ..... [3D Datasets]
│   │   ├── Qp, Qs .....float (ny,nx,nz)
│   │   └── Vp, Vs, Zp, Zs .....float (ny,nx,nz)
│   ├── composition ..... [Container]
│   │   └── by_material/ ..... [3D Datasets]
│   │       └── <name> .....float (ny,nx,nz)
│   └── group_fraction ..... [Mixed]
│       ├── group_names .....string [M]
│       └── <group> .....float (ny,nx,nz)
```