|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **TEST: Advection for Uniform Flow** | | | | | | | | | | | | | | | |
| Conceptualization of Test  Advection uniform flow test.png | | | | | | | | | Test Description | | | | | | |
| Test Setup | | | | | | | | | | | | | | | |
| Process Tested | | | | Dispersion Coeff.  (units?) | Decay Rate  (units?) | | | Flux Limiter (on/off) | | Domain Length | # Grid Cells | | | Time Step | # Time Steps |
| Advection (Flow) | Diffusion (Mixing) | Reaction (Decay) | |
| X |  |  | |  |  | | | Off | | ~100km | 64 | | |  | 32 |
| 128 | | |  | 64 |
| 256 | | |  | 128 |
|  | | | | | | | | | | | | | | | |
| Dimensionless Parameters | | | | | | | | | | | | | | | |
| Courant #: Courant Number.png | | | Mesh Peclet #: Mesh Peclet Number.png | | | | Diffusion #: Diffusion Number.png | | | | | DamKohler #  Damkohler Number.png | | | |
| Value ≥1 for stability | | |  | | | |  | | | | | ≤1 Advection dominates | | | |
| Value | | |  | | | |  | | | | |  | | | |
| Comment | | |  | | | |  | | | | |  | | | |
|  | | | | | | | | | | | | | | | |
| Test Results | | | | | | | | | | | | | | | |
| Plot of Results | | | | | | | | | Comments | | | | | | |
| Numerical Order of Accuracy and Convergence | | | | | | | | | | | | | | | |
| Grid Cell Refinement (Increase # Grid Cells) | | Order of Accuracy Measure (L-1 norm) Target: value ≥2 | | | | Convergence Measure  (L-∞ norm) Target: value ≥4 | | | | | | | Comments | | |
| 64 - 128 | | 2 | | | | 4 | | | | | | |  | | |
| 2nd Order Accurate | | | | Improved Convergence | | | | | | |
| 128 - 256 | | 2 | | | | 4 | | | | | | |
| 2nd Order Accurate | | | | Improved Convergence | | | | | | |
| Bottom Line: | | | | | | | | | | | | | | | |