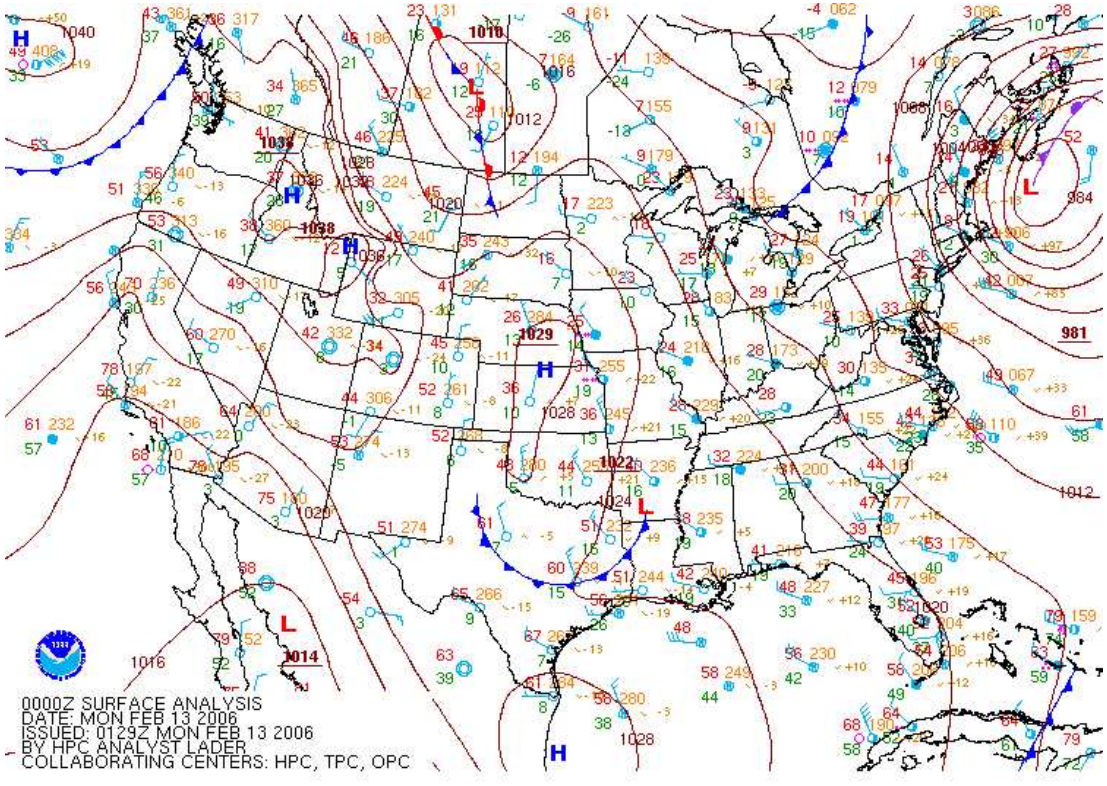
Overview

I’ve worked in several areas:

- Atmospheric Science
- Porous Media
- Multiphysics
- Nonlinear Waves

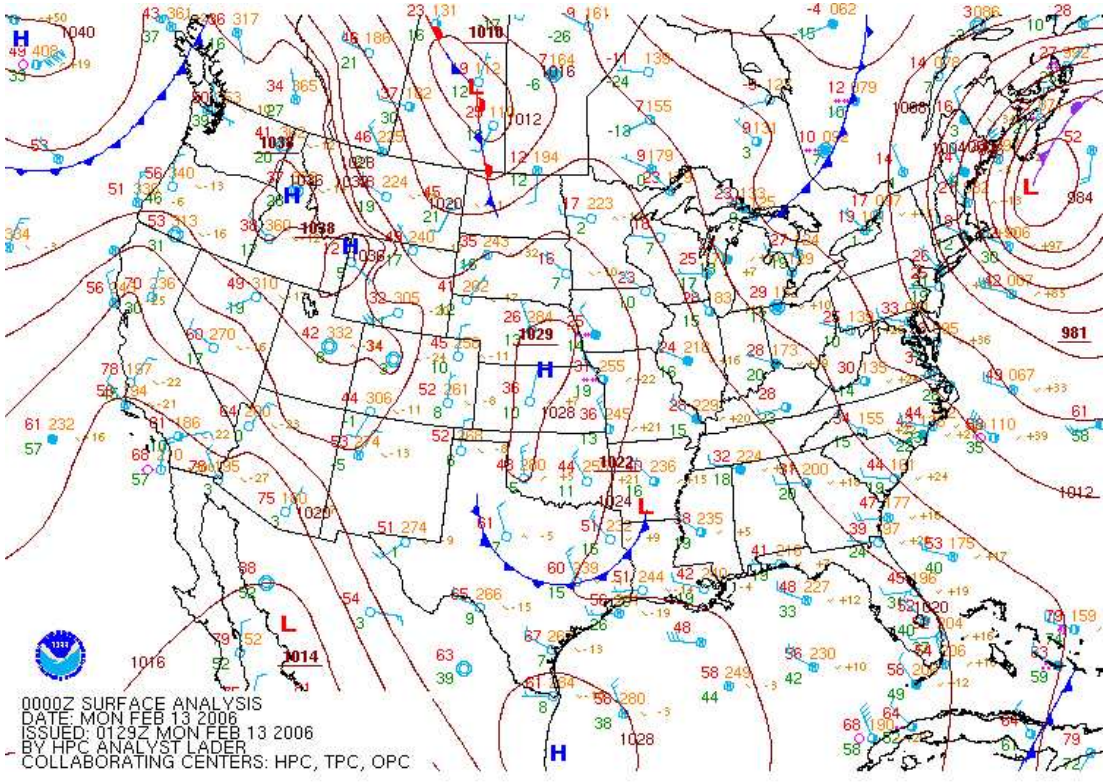
Atmospheric Science

(Cyclonic) Flows



Atmospheric Science

(Cyclonic) Flows

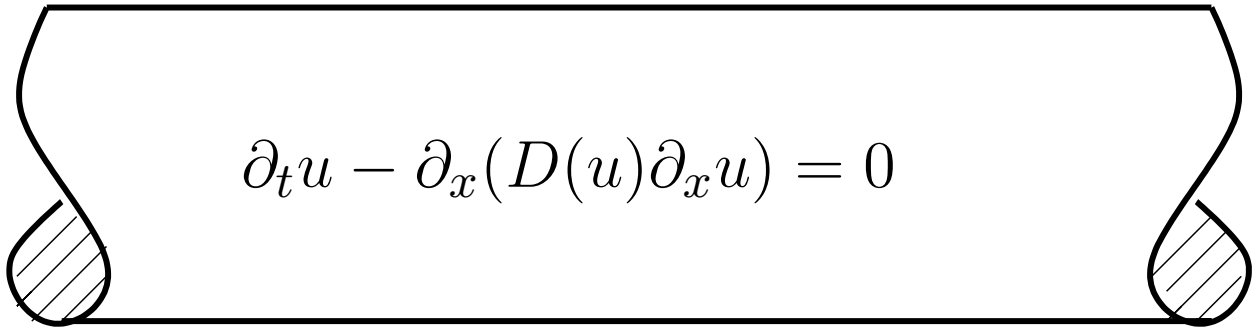


GOAL:

Recover wind velocity from pressure gradient.

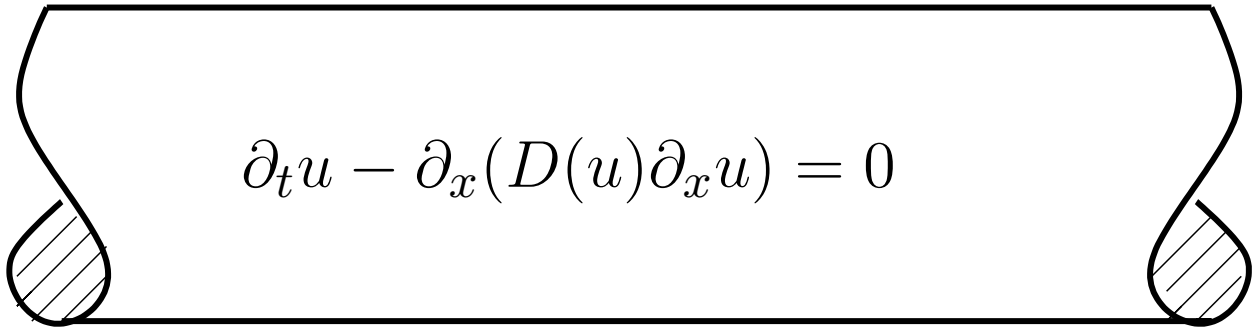
Porous Media

Parameter discovery



Porous Media

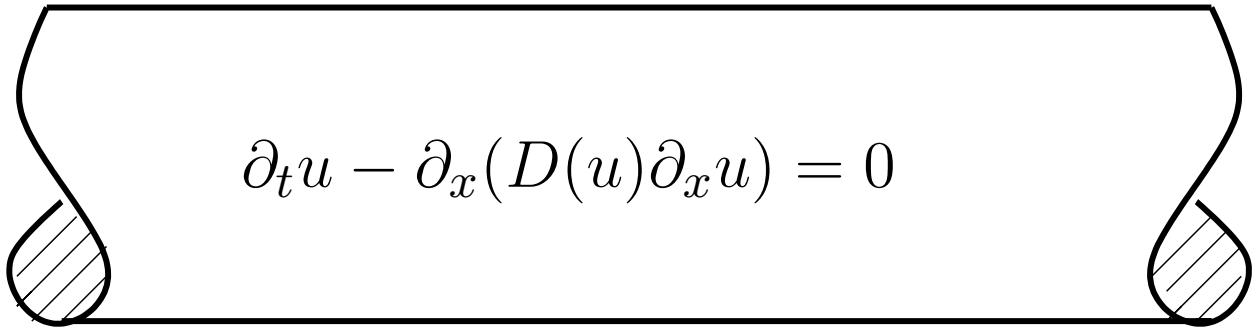
Parameter discovery



$u(0,t) = f(t)$ $\qquad$ $\partial_x u(1,t) = 0$

Porous Media

Parameter discovery



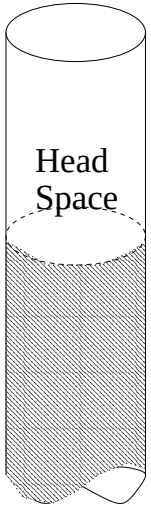
$u(0,t) = f(t)$ $\qquad\qquad$ $\partial_x u(1,t) = 0$

GOAL:

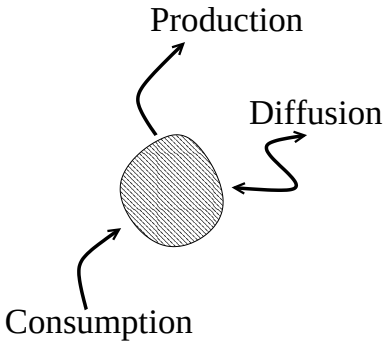
Given some output measurements of this system, recover $D(u)$.

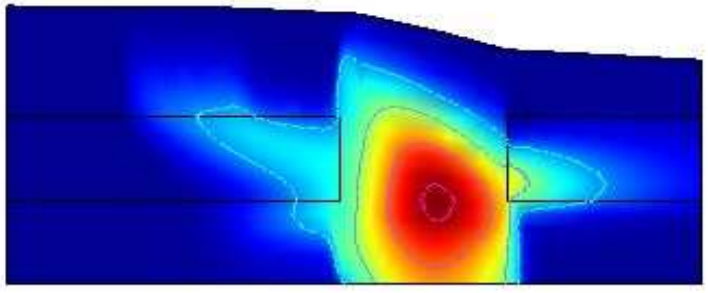
Porous Media

Methane



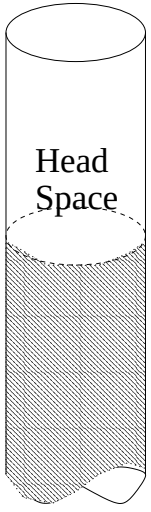
System





Porous Media

Methane



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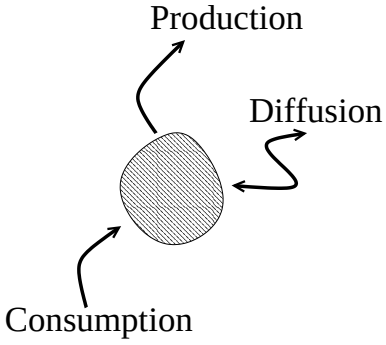
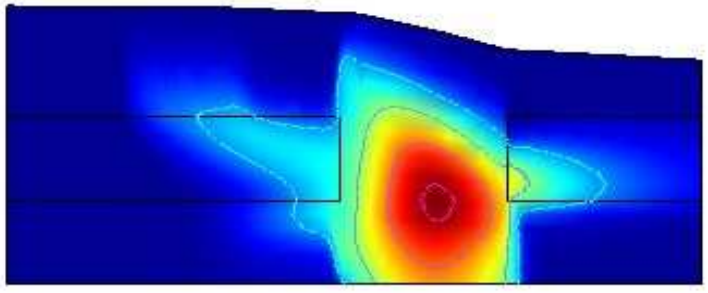


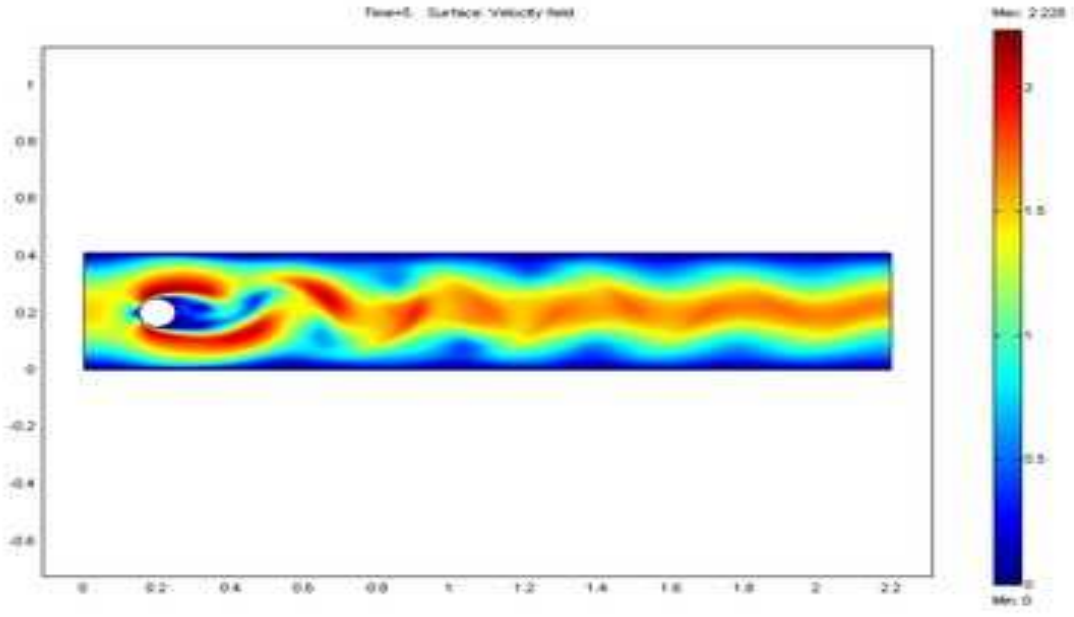


GOAL:

Understand methane dynamics over a wide range of ecological setting.

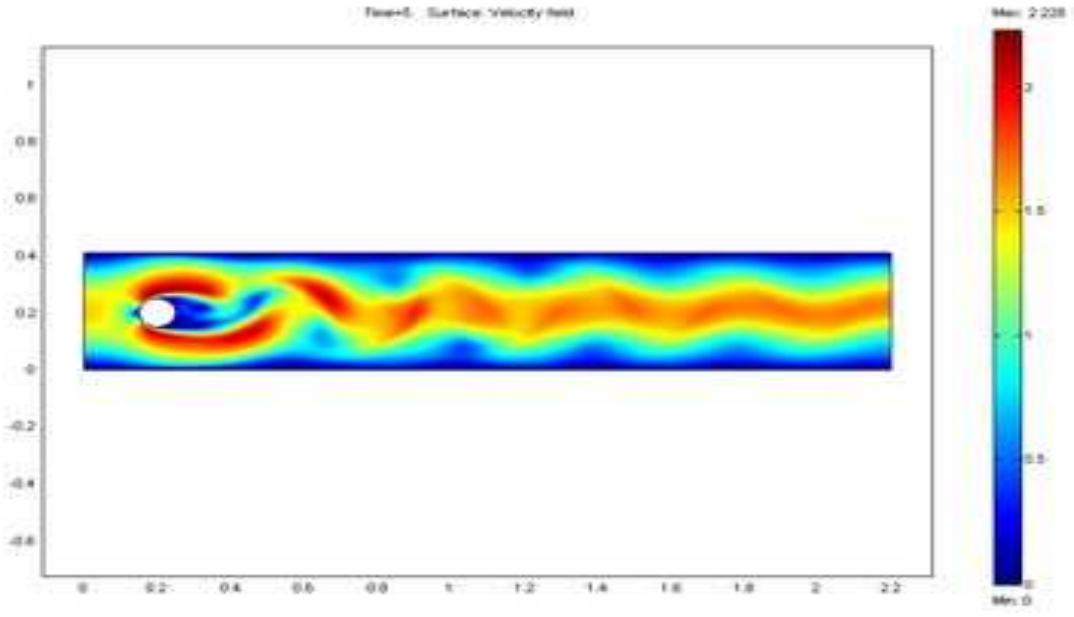
Multiphysics

Fluid flow with heating



Multiphysics

Fluid flow with heating



GOAL:

How is stability of flow affected by temperature dependant viscosity?

Nonlinear waves

Domain Recovery

Nonlinear waves

Domain Recovery

GOAL:

What does the bottom topography look like?