**Main idea:** mechanism and factors causing droughts are complex and nearly impossible to model rigorously like short term forecast; ; that’s why a machine learning model could be more favorable

**Contents:**

1. Complex causes of new drought

2. Different development trends of existing droughts

3. Difficulty in prediction due to the complexity of causes and development

4. Some current theoretical modeling and prediction studies have shown mediocre results

**1)** **The factors that shape drought climates are extremely complex and usually involve the interaction of multiple factors.**

Current literature suggests that there are at least six major *causes:*

a. Hadley circulation [literature to be added…]

b. Large topography [literature to be added …]

c. Land-air interactions [literature to be added …]

d. Dust aerosols [literature to be added …]

e. Sea-air interactions [literature to be added …]

f. Global Warming [literature to be added …]

**2)** **Different developments across drought types**

a. The response to global warming is highly variable across regions [literature to be added…]

b. The progress of drought development in different regions varies [literature to be added…]

c. Arid regions such as North Africa and Central Mongolia have severe further-aridification trends, while the arid regions in the Midwestern United States show a trend of wetting [literature to be added…]

**3)** **Difficulties in drought prediction**

a. There are no universally accepted theoretical models on the causes of drought [literature to be added…]

b. It is not yet possible to predict drought like we predict weather (through solving differential equations and simulations) [literature to be added…]

**4)** **Some unsatisfactory current attempts in theoretical modeling and prediction studies**

a. [literature to be added …]