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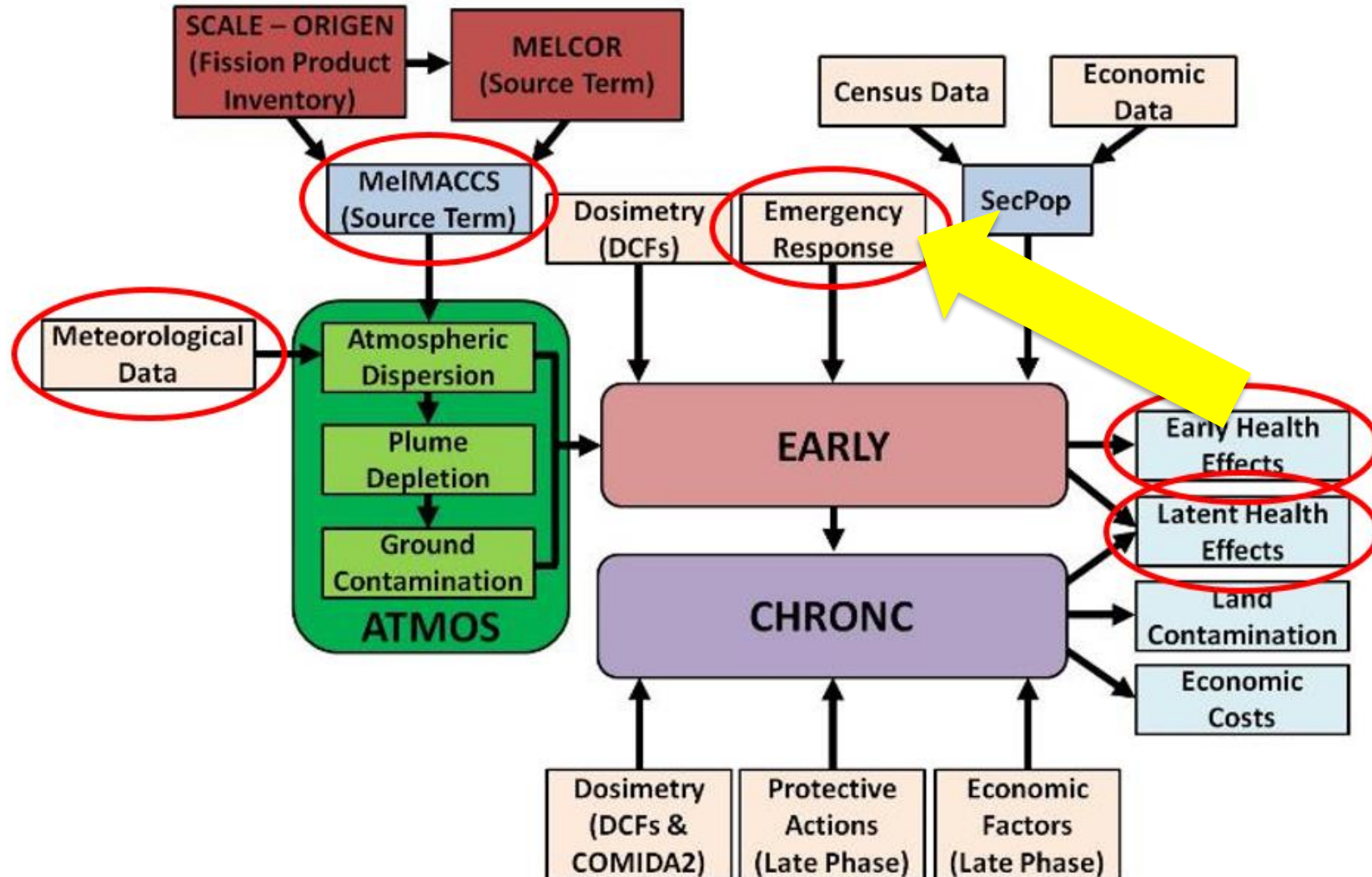
# Translating Site Information Into MACCS Parameters

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# Where We Are Within the Model



# What Sources of Information Contribute to My Model

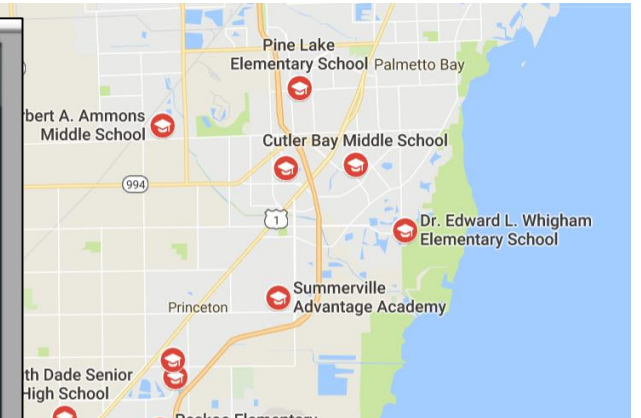
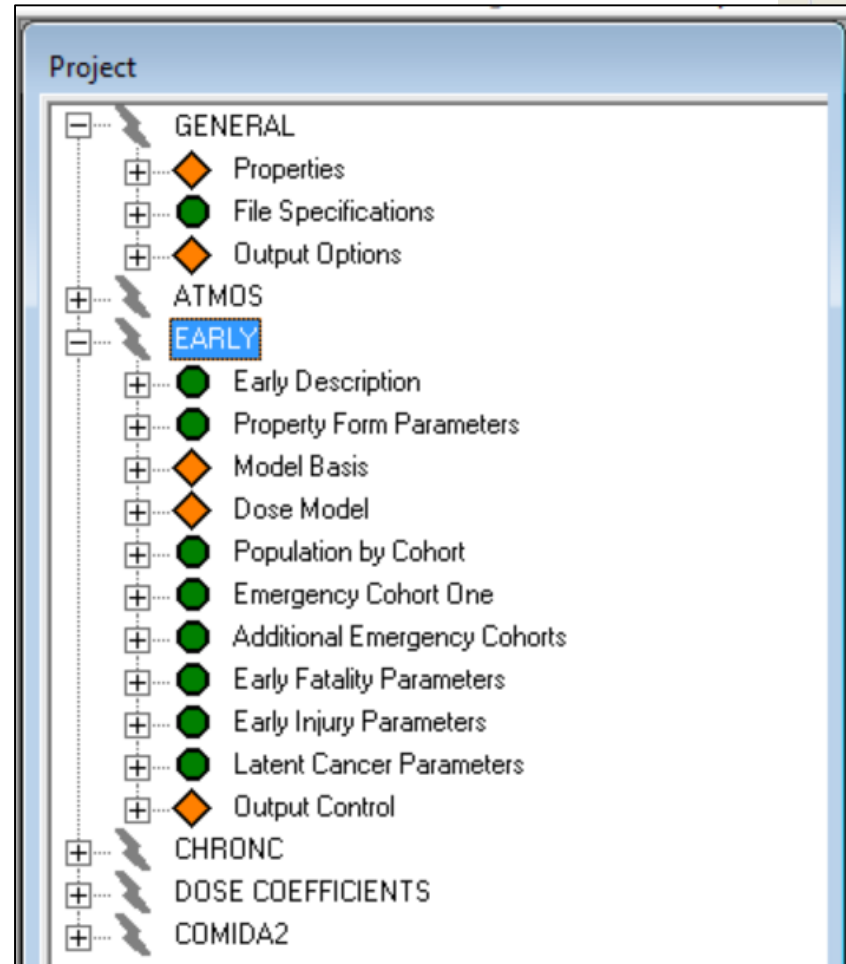
- Scope of Accident Scenario
- Regulation Requirements (example: NUREG-0654)
- Emergency Preparedness Documentation
  - Evacuation Time Estimates (ETE)
  - Offsite Emergency Plans
    - County and State Plans
- Communicating with licensee and offsite officials
- Web Research
  - Census Information
  - Special Event Information
  - Mapping of Special Needs Populations
- Knowledge of Human Factor Impacts
  - How well prepared is my population
  - How educated are emergency responders, those who would be communicating to population, and the population itself
  - Cultural distinctions of the country/region

# What Information Will Contribute to My Input Determination

- What type of accident scenario is being modeled and will it have offsite effects?
- Specified notification and declaration times
- Evacuation Time Estimates
  - 90% and 100% evacuation times
- How will offsite officials conduct the evacuation? Staged? Keyhole? Circular?
- Individual cohort characteristics
- How will population be notified/instructed?
- Where cohort groups are located
- What type of roadway infrastructure exists within and just outside the evacuation area?

# Where is this information used in MACCS...

- Predominately within the Early module but...
- The spatial grid can be influenced. This is within ATMOS (SPAEND),
- Special site characteristics could affect elements of CHRONC
  - Decontamination and Condemnation Inputs



# MACCS Parameters Which Are Typically Influenced by EP Information

| Parameters   |                |         |
|--|----------------|---------|
| Project Properties-<br>Site Data and<br>EVA/ROT tabs | NSECTOR        | IDIREC  |
| SPAEND   | KEYDIS         | ESPEEDS |
| SUMPOP   | OUTPUT OPTIONS | DLTSHL  |
| POPFRAC  | TIMHOT         | DLTEVA  |
| LASMOV   | TIMNRM         | OALARM  |
| NUMEVA   | DOSHOT         | DURBEG  |
| CSFACT   | DOSNRM         | DURMID  |
| SKPFAC   | EVACST         | ESPMUL  |
| GSHFAC   | RELCST         |         |
| COHORT<br>DEFINITION                                 | POPCST         |         |



# Examples of When Site Specific Attributes Influence MACCS Input

| Attribute  | MACCS   |
|--|---|
| <p>Rural site with minimal population out to 8 miles and large animal agricultural areas. There is a population center located between 8-15 miles from the example site. Web search of county emergency plans shows emergency preparedness within the site is incredibly robust, even within areas outside the 10 mile EPZ boundary.</p> | <p>Roadways within 0-8 miles of the evac zone will most likely not be congested. However, country roads do not allow for large capacities. Therefore ESPEEDs inputs may be predominately at or slightly less than free-flow speeds. Additionally you may want to make your spatial grid more fine from ~7-15 miles to accommodate for grid selections for special facilities. Because the public within the EPZ and shadow area has been actively educated on EP, we can assume that a higher percentage will follow directions. Finally, because animal agriculture is concentrated in the area, a higher population fraction of the population (out to 8 miles) will likely have prolonged DLTSHL times in order to simulate the time needed to gather livestock.</p> |

# Examples of When Site Specific Attributes Influence MACCS Input



| Attribute  | MACCS   |
|--|---|
| <p>A large employer (~12,000 employees) is located within an unpopulated region of the EPZ. In this area of the country, people travel on average 10-15 miles to work. This employer may shelter its employees in order to assist in the dose projections of the accident.</p> | <p>Using SUMPOP, the analyst can create a population specific to this one employer. Because there isn't any population in the vicinity of the site, the site file will not have any population assigned to this area. To get around this, the analyst can go into the site file, and deduct ~12,000 people within the 10-15 mile area and add this population to the appropriate area of the EPZ.</p> |



# Examples of When Site Specific Attributes Influence MACCS Input

| Attribute   | MACCS   |
|---|---|
| <p>A magnitude 9.0 earthquake causes a radiological release from a nuclear power plant. Sirens in the EPZ are rated to withstand an earthquake of at least 8.5.</p> | <p>Notification times to the population in the area may take longer due to downed phone lines and loss of power. This would affect your DLTSHL and possibly DLTEVA times. Roadways may be impassable due to road blockages or unstable bridges/overpasses. This would affect your evacuation routing.</p> |



# What to Remember...

- MACCS is an incredibly DYNAMIC and FLEXIBLE CODE!
  - Therefore, it is critical that you do QA checks, consult with other analysts, and run checks that your input is supplying expected results.
    - POPULATION MOVEMENT OUTPUT
    - Cohort population checks
- You can obtain very site specific models by adjusting input parameters based on site characteristics.
- We have only scratched the surface this week.
- Documents will soon be available to help the analyst determine what parameters are constant across models and what parameters typically change, and why.

# We Are Happy To Help!

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