# Beehive Physical Risk Database – Compact Context Summary

## General

Database models physical climate risk on a 2D global mesh (cells ~500m–50km). Each row represents mesh cell × risk type (Cyclone, Flood, Heat, Wildfire). Tables: "CycloneRisk", "FloodRisk", "HeatRisk", "WildfireRisk".  
  
Columns common across tables:  
- "region" (continent-scale: north\_america, south\_america, europe, asia, oceania, africa)  
- "geometry" (for spatial queries with ORDER BY geometry <-> ST\_SetSRID(ST\_MakePoint(lon, lat), 4326))  
- ssp{X}\_{Y}yr risk scores (1–7 scale; higher = higher risk)  
 \* X = SSP scenario (1, 3, 5)  
 \* Y = horizon in years (1, 10, 30)

## CycloneRisk

- Risk scores: ssp{X}\_{Y}yr (1–7)  
- Frequency & exposure:  
 \* ssp{X}\_{Y}yr\_cat{Z}\_wind\_scaling\_factor → wind damage scaling (Z = 1–5)  
 \* ssp{X}\_{Y}yr\_freq\_scaling\_factor → cyclone strike probability change  
 \* cat{Z}\_annual\_freq, total\_annual\_freq → historical strike frequency  
 \* cat{Z}\_flooded\_fraction → % flooded area during cyclone  
 \* avg\_building\_exposure → % buildings exposed

## FloodRisk

- Risk scores: ssp{X}\_{Y}yr (1–7)  
- Flood extent:  
 \* ssp{X}\_{Y}yr\_rp050\_percent\_flooded → % flooded in 50-yr flood  
 \* ssp{X}\_{Y}yr\_rp200\_percent\_flooded → % flooded in 200-yr flood  
- Other (less used): hurricane counts/change → prefer CycloneRisk for cyclones

## HeatRisk

- Risk scores: ssp{X}\_{Y}yr (1–7)  
- Heat stress metrics:  
 \* ssp{X}\_{Y}yr\_ann\_days\_above\_096f → # days/year above 96°F  
 \* ssp{X}\_{Y}yr\_ann\_days\_above\_099f → # days/year above 99°F  
 \* ssp{X}\_{Y}yr\_ann\_days\_above\_w75f → # days/year above wetbulb 75°F  
 \* ssp{X}\_{Y}yr\_ann\_heat\_waves\_4d5percent → # heatwaves/year (4+ days, +5%)  
 \* ssp{X}\_{Y}yr\_max\_avg\_1mo\_tmax, ssp{X}\_{Y}yr\_max\_avg\_1mo\_twbmax → 1-mo rolling max temps

## WildfireRisk

- Risk scores: ssp{X}\_{Y}yr (1–7)  
- Fire frequency & climate stress:  
 \* ssp{X}\_{Y}yr\_fires\_30yr → expected # fires in 30 years  
 \* ssp{X}\_{Y}yr\_fire\_percent\_change → % change in fire occurrence  
 \* ssp{X}\_{Y}yr\_ann\_arid\_waves → # arid waves/year (20+ dry days)  
 \* ssp{X}\_{Y}yr\_ann\_heat\_waves → # wildfire-defined heatwaves/year  
 \* ssp{X}\_{Y}yr\_ann\_precipitation → annual precipitation (mm)  
 \* ssp{X}\_{Y}yr\_avg\_temp → avg annual temp (°F)  
 \* ssp{X}\_{Y}yr\_max\_consecutive\_dry\_days → extreme drought days  
 \* ssp{X}\_{Y}yr\_min\_avg\_relative\_humidity → lowest 60-day avg humidity  
 \* ssp{X}\_{Y}yr\_min\_2month\_cumulative\_precipitation → driest 2-month stretch (mm)  
- Exposure/economics:  
 \* hist\_avg\_loss\_rate → % avg building loss if fire occurs  
 \* avg\_building\_exposure → % buildings exposed  
 \* primary\_landcover, secondary\_landcover

## Querying Patterns

City-based:  
SELECT column, 'City' AS city, 'Hazard' AS hazard  
FROM "Table"  
ORDER BY geometry <-> ST\_SetSRID(ST\_MakePoint(lon, lat), 4326)  
LIMIT 1;  
  
Region-based:  
SELECT AVG(column) AS avg\_column, 'Hazard' AS hazard  
FROM "Table"  
WHERE region ILIKE '%region%';  
  
Multiple cities/hazards: wrap each SELECT and UNION ALL.