Candidate CHARTS Model Update

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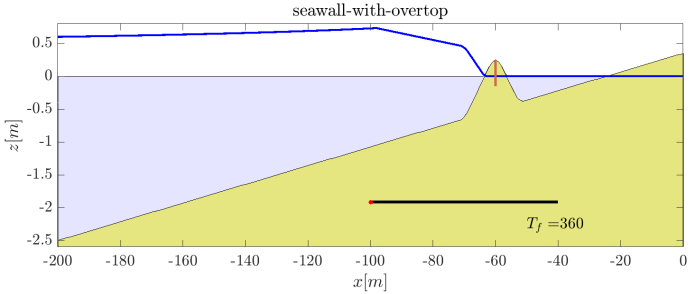

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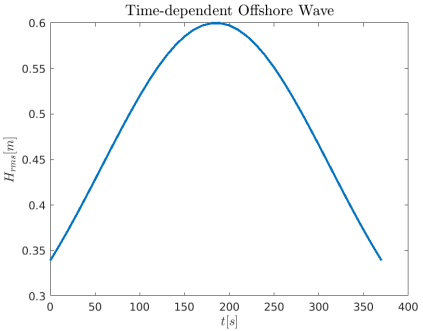
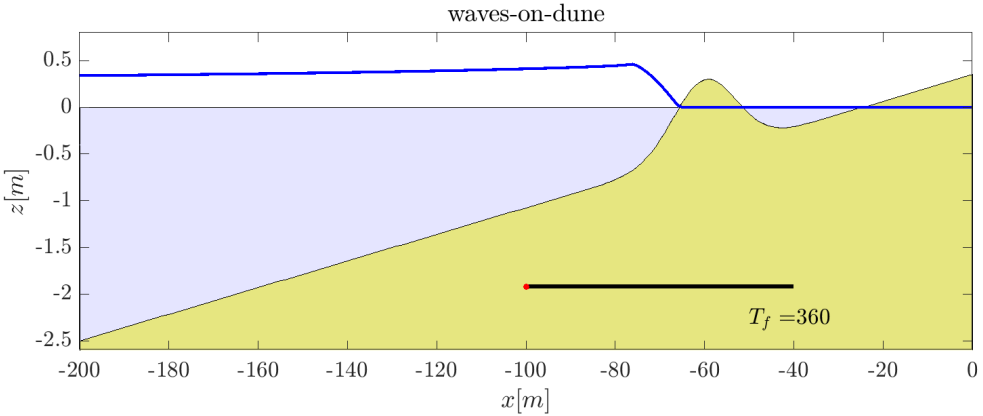
Time-dependent Offshore Wave BC

Previously limited constant offshore wave conditions. Now:

```
p.wave.time = 0:10:p.ftime+10;
p.wave.Hrms = .2+.4*exp(-(p.wave.time-
              .5*p.time).^2/(.5*p.ftime)^2);
p.wave.T = 8*ones(size(p.wave.time));
```



New BC option

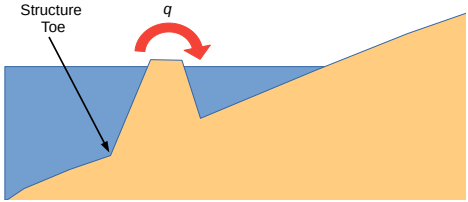


The Challenge of Overtopping

No simple and general way to unclude wave-driven mass flux in a depth-integrated model. So let's cheat: The Eurotop empirical relationship has been established with form

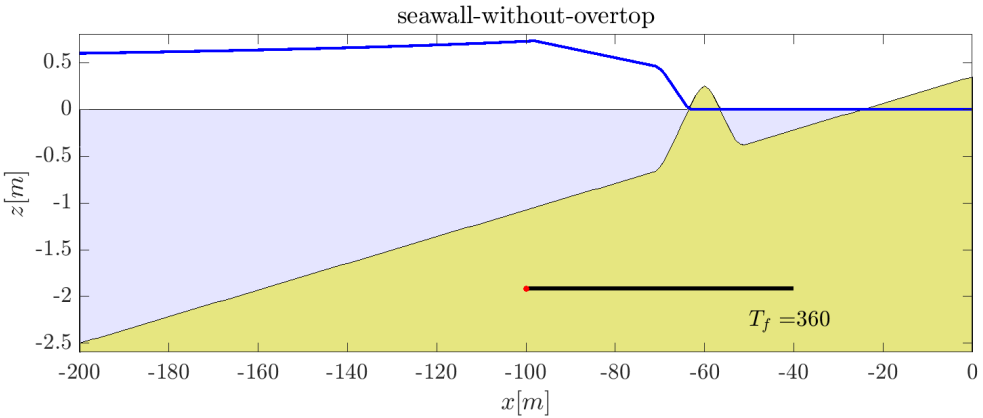
$$q = 0.09\sqrt{gH_{m0}^3}\exp\left\{-1.5\frac{R}{0.5H_{m0}}\right\}$$

where the exact coefficents seem to be the source of endless bickering.

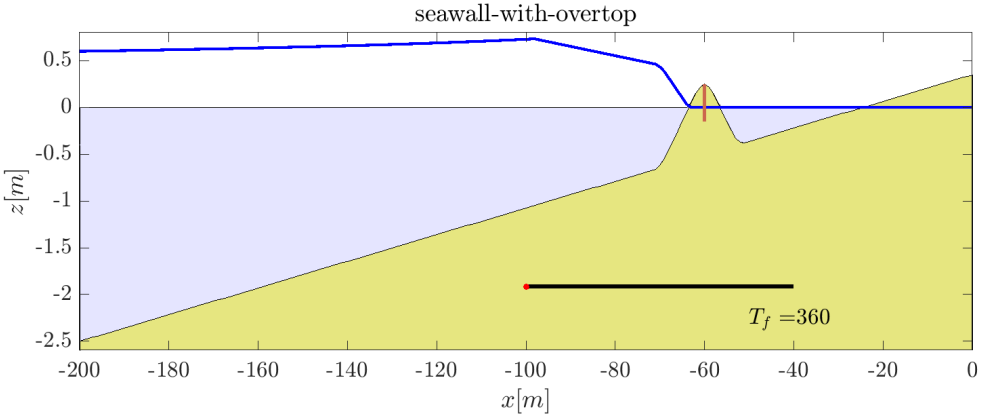



```
g.struct.crest_x = mean(x)+.2*L; %x pos
g.struct.crest_elev = .25;       %add structure geom
g.struct.crest_width = 2;        %add structure geom
g.struct.side_slope = 1/1;       %add structure geom
g.struct.iover = 1;              %include eurotop ovrtp vol
g = addstructure(g);             %add to g structure
```

No Overtopping



Including Overtopping



Numerical Stability for Steep Slopes

Structures and realistic dunes pose a significant challange as the simple NLSW solver and heuristic MSBC suffer instability.