% two layers with an interface at z_interface meters depth
z_interface=120;
% 两层界面位于 z_interface 米深度处，V2>V1 的单界面（折射）
SINGLE INTERFACE WITH V2>V1 (refraction)

项目在做什么？
Use the time-domain acoustic wave equation to visualize and quantify how a P-wave generated by a Ricker source **refracts at a faster lower layer**, producing a **head wave** that becomes the first arrival beyond a crossover distance. This is the canonical "single interface refraction ($V_2 > V_1$)" experiment.

结果是什么？
Direct wave (through V_1): straight-line moveout with slope **$1/V_1 = 1/800 = 1.25$ ms/m**
直达波（通过 V_1）
Critical refraction (head wave along the interface)
临界折射（沿界面的首波）

运行过程可以看到：
A **movie of the evolving pressure field** (snapshots) where you see：

- Down-going wave bending at the interface;下行波在界面处弯曲；
- Energy guided along the interface (head wave);沿界面引导的能量（头波）；
- Up-going wavefronts radiating back to the surface.向上的波前辐射回表面。

A **gather of receiver traces vs offset** where you can clearly identify:**接收器轨迹与偏移量的集合** ，您可以清楚地识别：

- The **direct-wave** line (slope ~1.25 ms/m);**直达波**线（斜率~1.25 ms/m）；
- The **refracted head-wave** line (slope ~0.5 ms/m) with **intercept ~0.229 s**;**折射首波**线（斜率~0.5 ms/m）， **截距~0.229 s** ；
- The **crossover** near **~300 m** offset.**交叉点**偏移约 **300 米** 。

概述全部：
I built a two-layer ($V_2 > V_1$) acoustic model, fired a Ricker source, recorded near-surface traces, and the results show the **textbook refraction signature**—direct arrivals, a **linear head-wave** with nonzero intercept time, and a **crossover** where the head wave becomes the first arrival—exactly what we expect for single-interface refraction.