

## Sequence n° 2: wave propagation

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### ACTIVITY 1 : Tidal bore

#### Document 1: Tidal bores



A **tidal bore** is a **tidal phenomenon** in which the leading edge of the incoming tide forms a **wave** (or waves) of water that travels up a river or narrow bay **against the direction** of the river or bay's current.

Bores occur in relatively few locations worldwide, usually in areas with a large tidal range (typically more than 6 meters (20 ft) between high and low **tide**) and where incoming tides are **funneled** into a **shallow**, narrowing river or lake via a broad bay. The funnel-like shape not only increases the tidal range, but it can also decrease the duration of the **flood tide**, down to a point where the flood appears as a sudden increase in the water level. A tidal bore takes place during the flood tide and never during the **ebb tide**.

Source: wikipedia

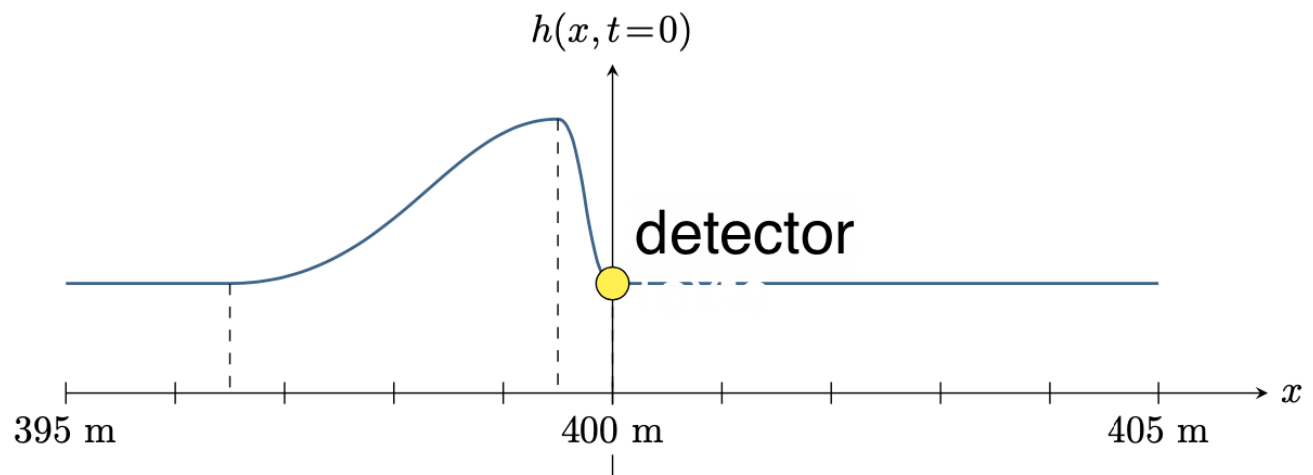
#### Document 2: Arnside bore



Watch : [https://en.wikipedia.org/wiki/Tidal\\_bore](https://en.wikipedia.org/wiki/Tidal_bore)

Source: wikipedia

**Document 3: Problem**



A detector detects a tidal bore at distance  $x_0 = 400\text{m}$  inside the river inlet.

The wave has a speed of  $c = 20 \text{ km}\cdot\text{h}^{-1}$ . A surfer is waiting for the wave at  $x_{\text{surf}} = 1,9\text{km}$  on the river.

How long will he have to wait for the bore?

■ **Understanding tidal bores: vocabulary**

Read documents 1 and watch document 2. The table below contains definitions. Insert the correct word next to each definition using Document 1.

Word	Definition
	Contre le courant
	Vague
	Phénomène de marée
	Marée
	Marée descendante
	Marée montante
	Peu profond

■ **Understanding tidal bores: problem**

Give a numerical answer to the surfer’s problem in Document 3

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## Activity summary

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What you must remember:

- **propagation**
- **celerity**

Skills linked to the curriculum:

Compétences	Capacités à maîtriser
- APP	Faire le lien entre la situation réelle et le modèle proposé.
- ANA	Caractériser et identifier des ondes transversales et des ondes longitudinales. Représenter et exploiter les graphes des évolutions temporelle et spatiale du phénomène observé.
- COM	Formuler et argumenter des réponses structurées Formuler et présenter une conclusion