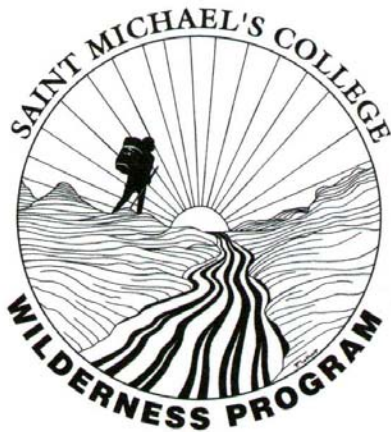


# Saint Michael's College Wilderness Program

## Coastal Kayak Trip Leader Training

### Handouts



## Overview:

Completion of this course does not represent the arrival at a destination but instead it should be viewed as the beginning of a journey. Coastal Kayak leadership is a demanding and constantly evolving field and therefore one should be diligent in continuing their education through training, assessment and praxis.

## The Open Water Environment:

Leading in open water requires skill, judgment and situational awareness and even then there are no guarantees. When working with groups on open water be conservative, one can always make an easy day more challenging but the inverse is rarely true.

## The Coastal Kayak Leader:

What skills do I need to function as a leader in open water conditions?

### Technical Skills

- Strokes in conditions
- Launching and landing techniques
- Managing surf
- Managing various sea states
- Various rescues in conditions
- Rolling
- Towing
- Edging



### Leadership Skills

- Group Awareness
- Environmental Awareness
- Journey Planning
- Navigation
- Weather Assessment
- Sea "person" ship
- First aid
- On-water repairs

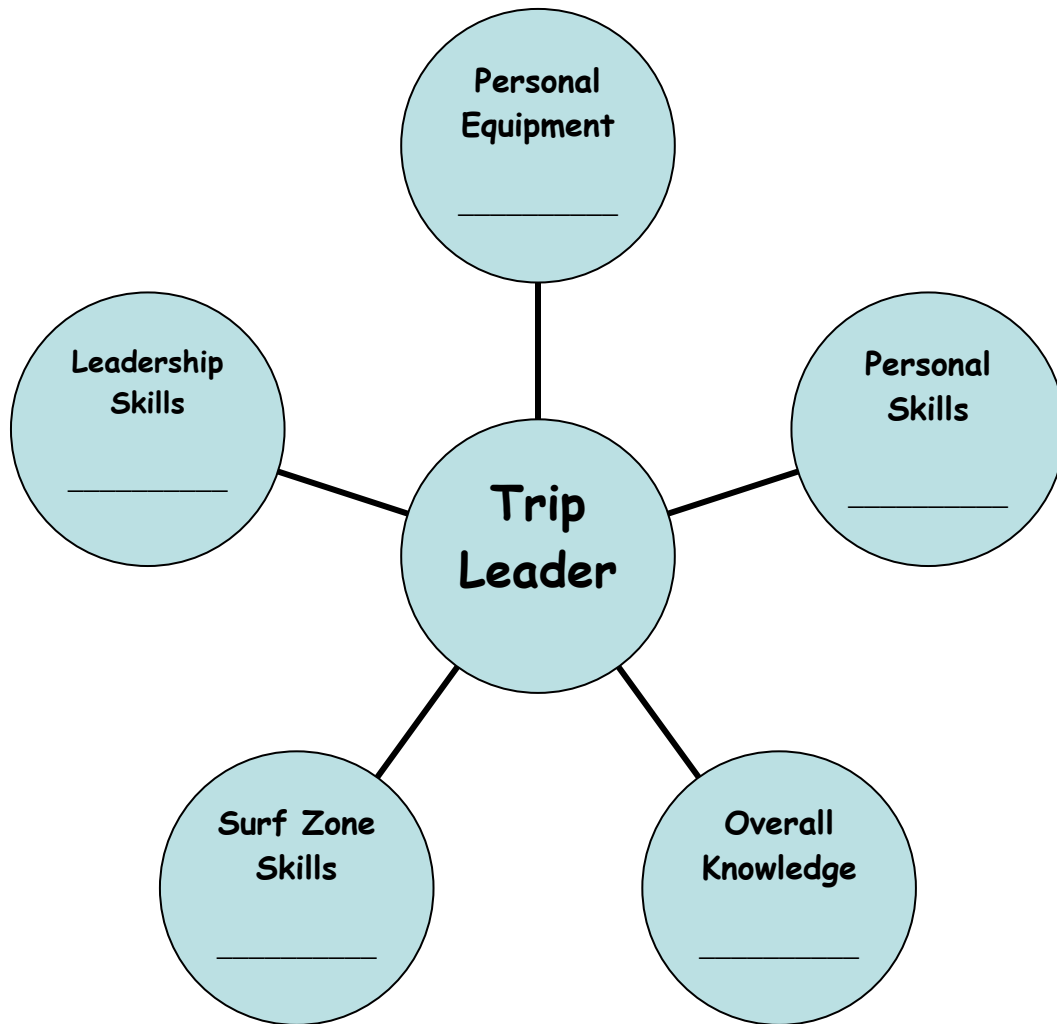


### Equipment

- Navigation Tools
- Communication Tools
- Repair Kit
- First Aid Kit
- Kayak

= Trip Leader

# Personal Skills Assessment



**Please rank your self on a 1 to 5 scale.  
(1= needs attention - 5= dialed)**

**In each of these categories list one area/skill that you would like to see addressed (i.e. Personal Skill: stern rudder)**

## Towing

**Tows:** a proper tow system is an essential part of a paddler's kit; there are numerous types of commercially available tow systems and some paddlers choose to rig their own system. Generally, we recommend that paddlers possess a "long" tow (waist tow, PFD tow or deck mounted tow) and a "short tow" or contact tow. Despite the "brand," all "long" tow systems should be: easy to deploy in conditions, releasable, strong and long enough to keep boats from colliding in conditions. "Short" tows vary in length from a daisy chained long tow, to a short tether or a contact tow and vary by individual.

**Be Advised:** A mix of kayaks, lines and water (rough water in particular) make for a dangerous cocktail; a paddler must be able to escape the system quickly (i.e. quick release) and be able to untangle themselves and clients in any conditions (i.e. rescue shears, rescue hook or knife?). At the end of the day a tow system needs to be **releasable, easily deployable, long enough and strong enough.**

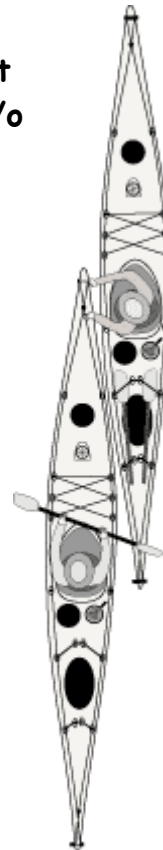
### Skills:

- ❑ Attaching the tow:
  - ❑ Who (Who should tow? Who should be towed?)
  - ❑ When (at what point is a tow used, who makes the decision, leadership issues surrounding towing )
  - ❑ Where (where are the possible attachment points ((every kayak is different)) **AVOID** using toggles!)
- ❑ Types of tows:
  - ❑ Fan/Husky Tow
  - ❑ Tandem/Serial Tow
  - ❑ Contact Tow w/ line
  - ❑ Contact Tow w/o line
  - ❑ Towing a swimmer
  - ❑ Retard Tow
  - ❑ Towing a raft
  - ❑ Anchoring a rescuer



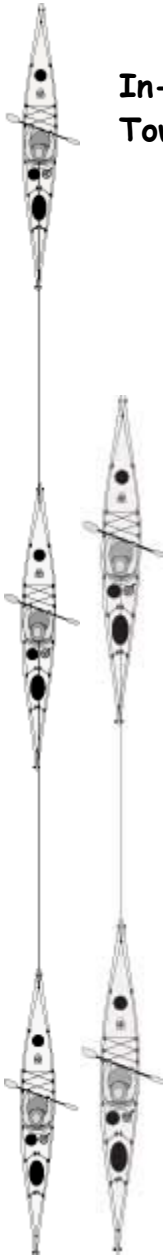
**Anchoring a Rescuer**

**Contact  
Tow w/o  
line**



# Towing Continued:

**In-Line  
Tows**



**Husky Tow**

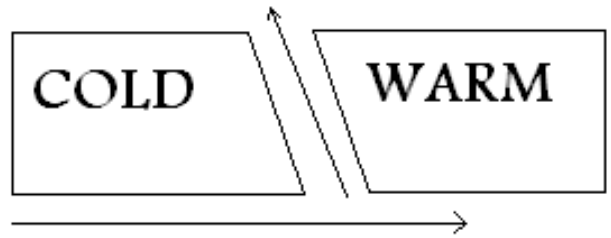


# FIELD FORECASTING "LIGHT"

The weather (wind, precipitation, lightning, etc) that we are primarily concerned with is associated with "weather fronts."

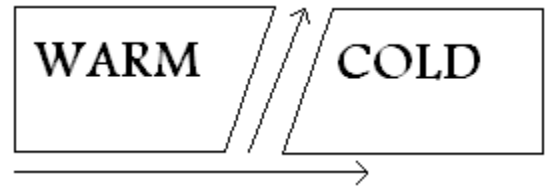
An approaching **cold front** will result in:

- Rapidly developing, lifting, thickening and darkening clouds
- Temperature drop
- Winds that increase and shift towards the south, then southwest
- Barometric pressure falling
- Precipitation, possibly thunderstorms
- Followed by cooler, crisper air



An approaching **warm front** will result in:

- High thin clouds that thicken and drop gradually
- Slowly falling barometric pressure
- Rainfall intensity less than a cold front, but of a longer duration
- Followed by warmer, more humid air.



In order to monitor fronts and weather we watch:

- Barometric Pressure
- Wind
- Clouds
- Temperature

## Barometric Pressure:

- Storms are generally associated with areas of lower barometric pressure
- The faster and farther the barometric pressure drops, the more significant the weather

## Wind

- Winds indicate that something is changing
- The stronger the wind, the more significant the change
- Winds that are "backing" counterclockwise around the compass indicate low pressure systems.
- Put your back to the prevailing wind, stick out your left arm and you are pointing at the closest low pressure.

## Clouds:

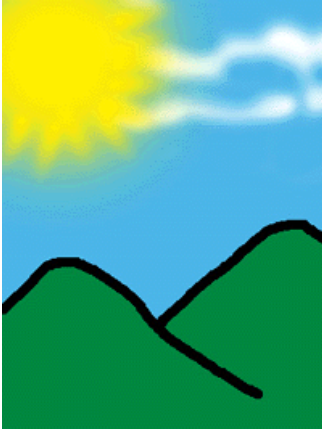
- What clouds are you seeing, and what weather have you seen with those clouds before?

## Temperature:

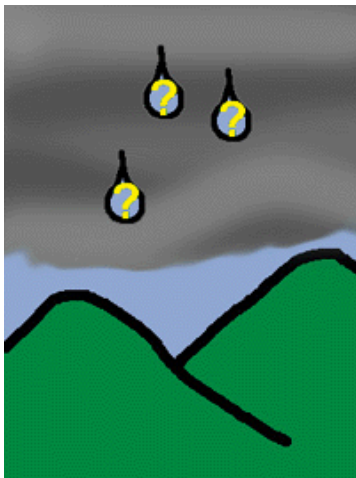
- Is the temperature changing throughout the day as you would expect?
- Warm front or cold front?

## Cloud Types:

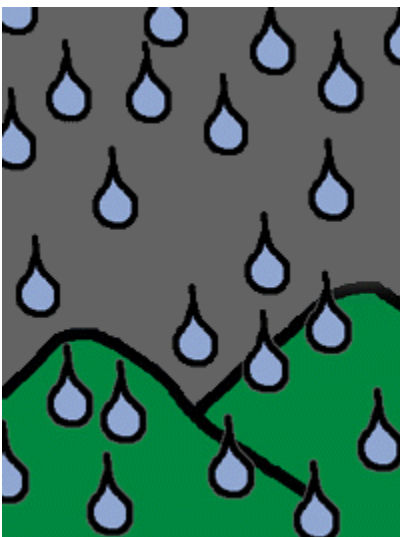
- **Cirrus:** Cirrus clouds are thin and wispy. They themselves do not indicate an imminent storm, but may be associated with a storm that is moving in over the next 1-2 days.



- **Stratus:** These often blanket the sky with a grey, monotonous blanket.



- **Nimbostratus:** These are very similar to stratus, but are darker, with rougher bottoms. They are also responsible for most of the precipitation from middle level clouds.



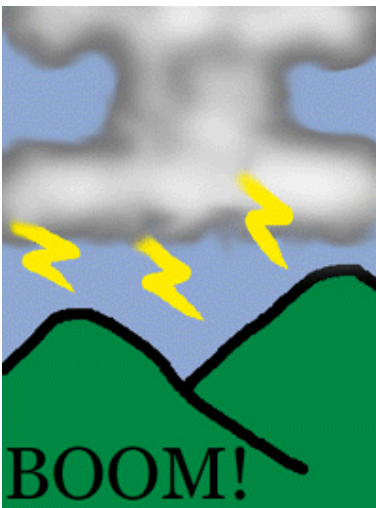


- **Cumulus:** Cumulus clouds look like cotton balls, and can be small or large. They may be associated with rain showers, but should be watched to see if they are growing.



- **Cumulonimbus**

These are very tall cumulus clouds, and often have a distinctive anvil shape. They are associated with the more violent weather that we worry about; Heavy rain, thunderstorms, etc.





# Navigation Basics

## Charts and Maps

**Nautical Chart:** The nautical chart is a 2-dimensional representation of a 3-dimensional world. Although this results in various distortions, as long as the following two requirements are met we can use this image for navigational purposes.

1. The angles between three objects in the chart should be the same as the angles between the real objects which they represent.
2. A straight course should appear as a straight line in the chart.

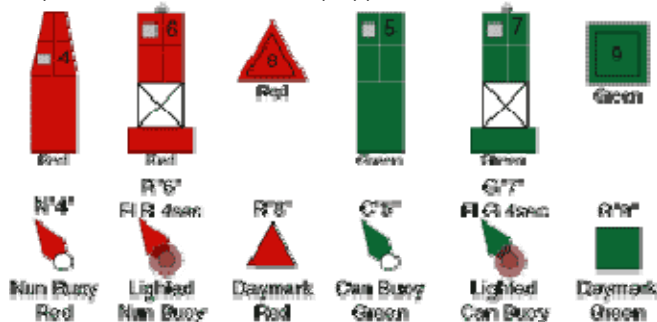
**Topographical/Ordinance Survey Maps:** Both Topo and OS maps are 2-dimensional representations of a 3-dimensional but unlike nautical charts they provide more detailed relief of land masses.

What is the role of Topos and OS maps in sea kayak navigation?

**Chart 1:** Chart 1 is actually not a chart but a key to all symbols contained in charts. Because charts are representations we must learn to interpret symbols to extract meaning, Chart 1 is therefore a useful tool to deciphering seldom seen symbols.

## Common Buoys

(top row illustrates how they appear in real life / bottom row depicts how they appear on a chart)



**Scale:** Most charts cover a significant section of water and therefore must be drawn to scale so that measured distance on the chart matches real distance traveled over the face of the earth.

1:62,500=15 minute. (1"= 1 mile) (Covers More Area)

1:24,000=7.5 minute. (2.5"=1 mile) (Provides More Detail)

**Measuring Distance:** 1 minute of Latitude = 1 Nautical Mile

## Plotting a Course

### First

Find a nice flat surface, warm up a cup of coffee; gather all of your tools (compass, protractors, dividers, parallel rulers and chart) and get a big picture of where you want to go.

### Second

Roll out your chart and determine if the trip is feasible (i.e. length, ability of the group).

### Third

Look for challenges along the way (i.e. shallow water, shipping channels, rocks, deep channels, exposure). Write down all of the challenges, is the trip still feasible?

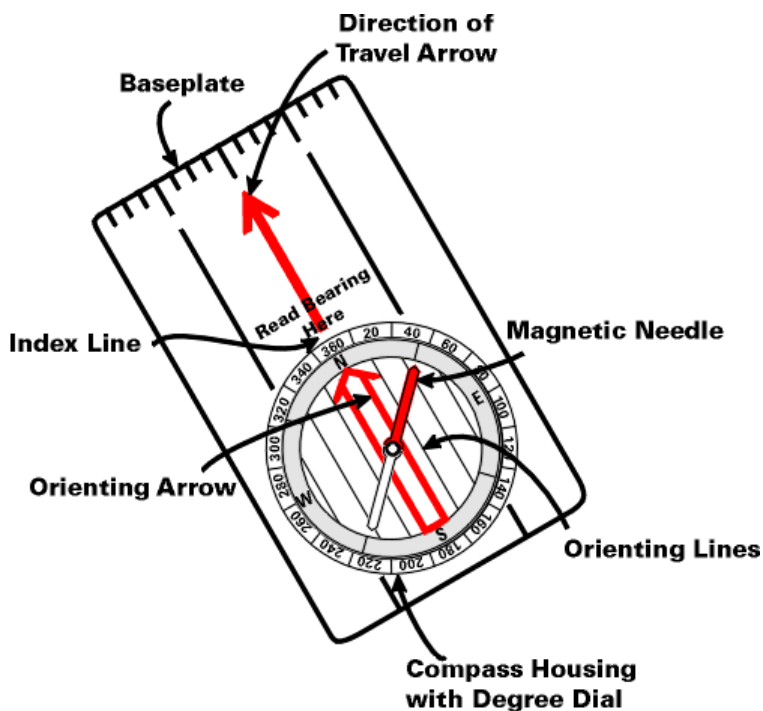
### Fourth

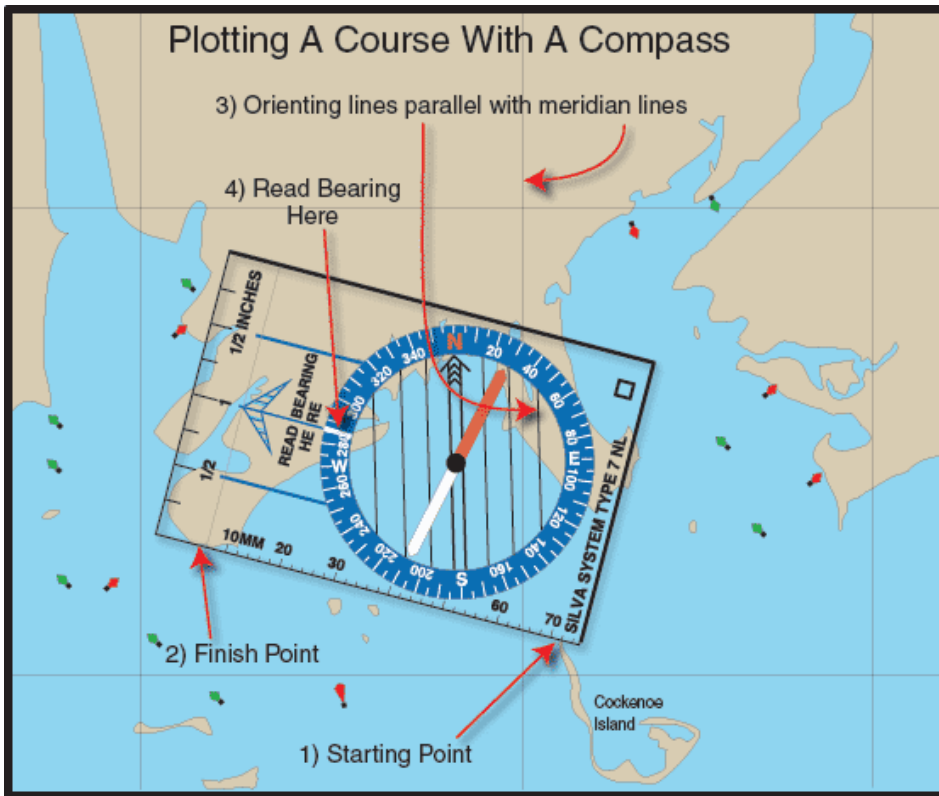
Draw straight lines between point A (start point) and B (end point) or draw straight lines between legs of your trip (i.e. Point A (start point, Lonely Point) to Point B (No Luck Island) to Point C (end point, Desolation Cove))

### Fifth

#### Laying off a bearing (Using a Compass)

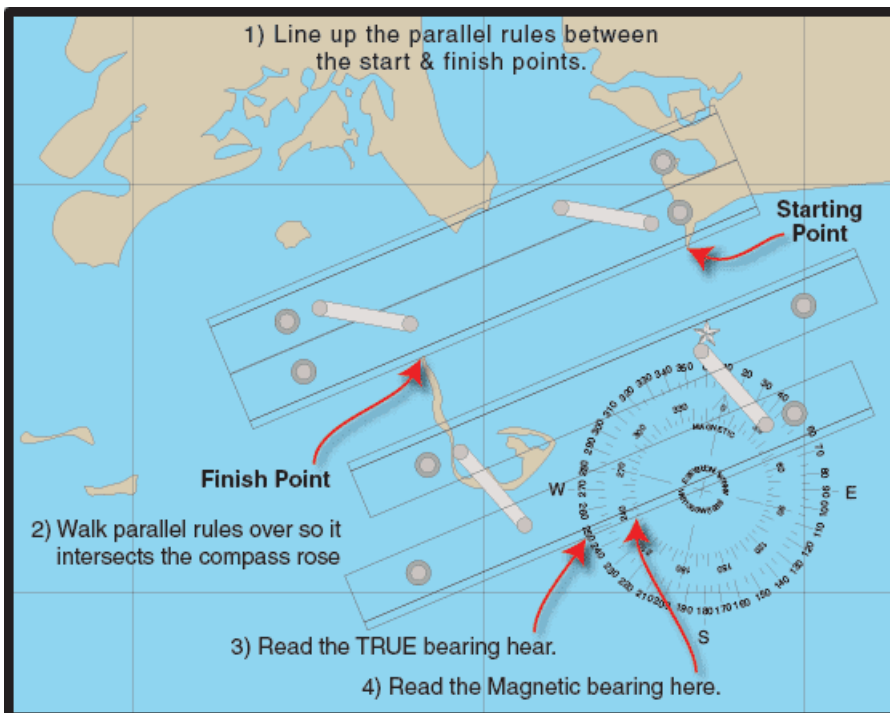
Using a compass as a protractor: Place the baseplate edge of the compass along the line that you have drawn with the direction of travel arrow point toward your intended destination. Then rotate the compass housing so that the North/South orienting lines of the compass line up with the North/South (longitudinal) lines on the chart. **IGNORE THE NEEDLE!** Read your bearing on the index line. This is a True Bearing and must be converted to a magnetic bearing. See *Variation*.





### Laying off a bearing (Using Parallel Rulers)

Place the edge of the parallel rulers along your line then carefully "walk" your rulers to the nearest compass rose. Line either edge of the rulers up so that it bisect the center of the compass rose and read the bearing on the outer rings of the compass rose (inner ring=magnetic bearing /outer ring=true bearing).



### **The Final Step**

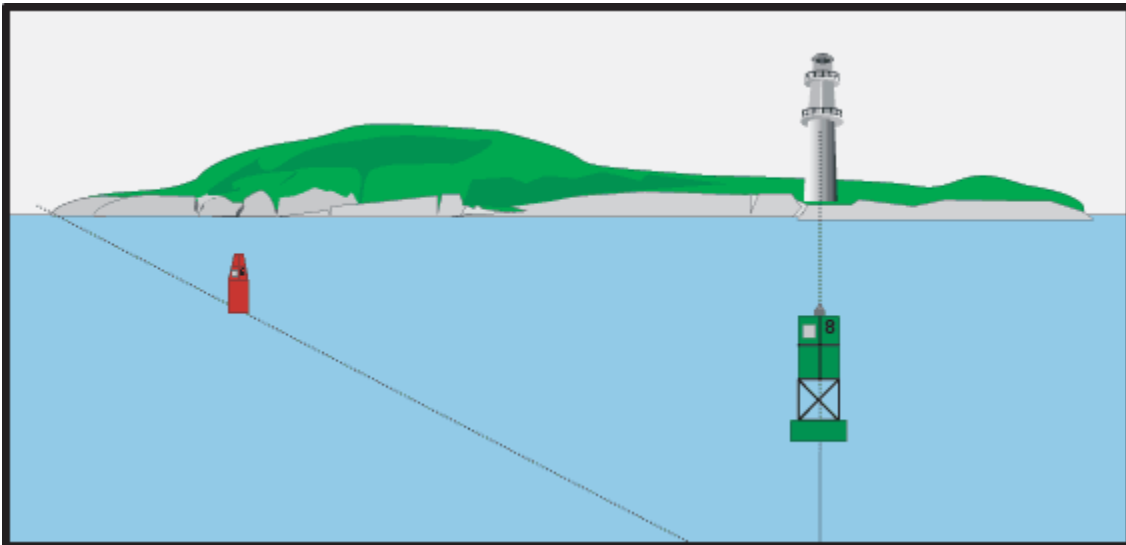
Write everything down on waterproof paper, on your boat, on the chart etc., because you can't do this on open water.

**Question: How Do I Navigate On Open Water?**

**Answer: Piloting "The Art of Navigation"**

### **Ranges:**

Ranges (also called transits) are the most important tool that kayakers have on open water particularly in current and/or wind. A range is formed anytime we line up two stationary objects.



**Note: If the object in the back appears to move to the left than you are drifting to the left and vice versa.**

### Variation:

Simply put variation (declination in land navigation) is the difference between True North and Magnetic North. Since we steer by magnetic bearings we need to convert all True Bearings to Magnetic Bearings. This is achieved by either adding or subtracting a certain number of degrees.

### Deviation:

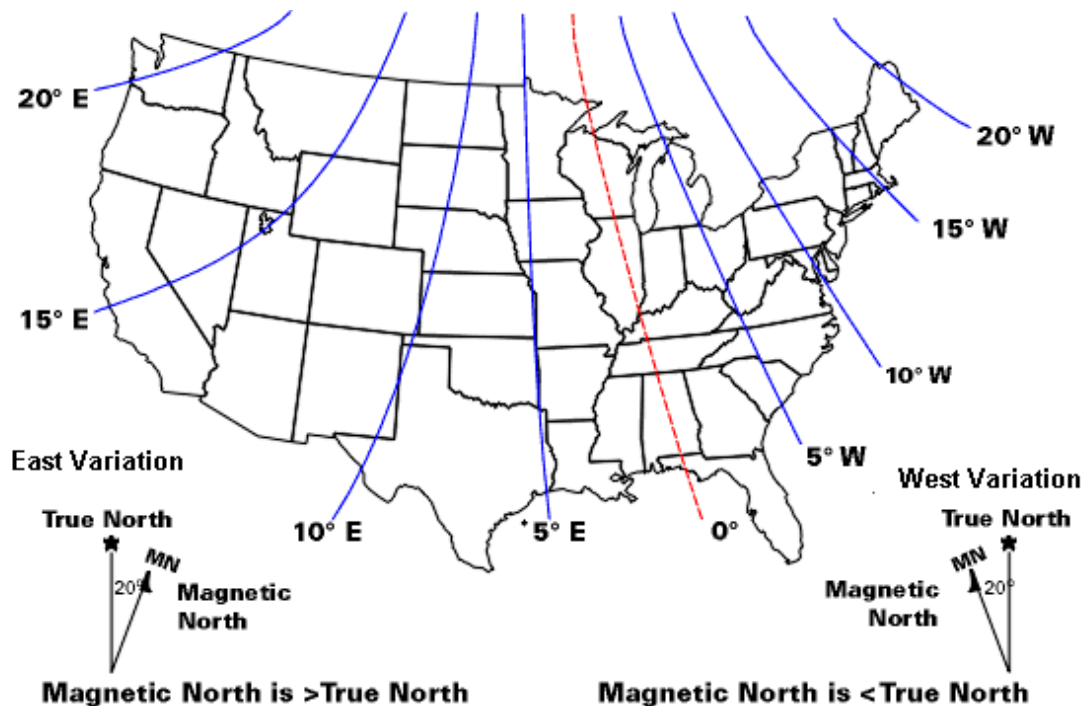
Is the pull exerted on the compass needle by large pieces of metal on a boat i.e. engine. Generally this is irrelevant to sea kayakers given that you haven't packed metal objects under their compass.

### Question:

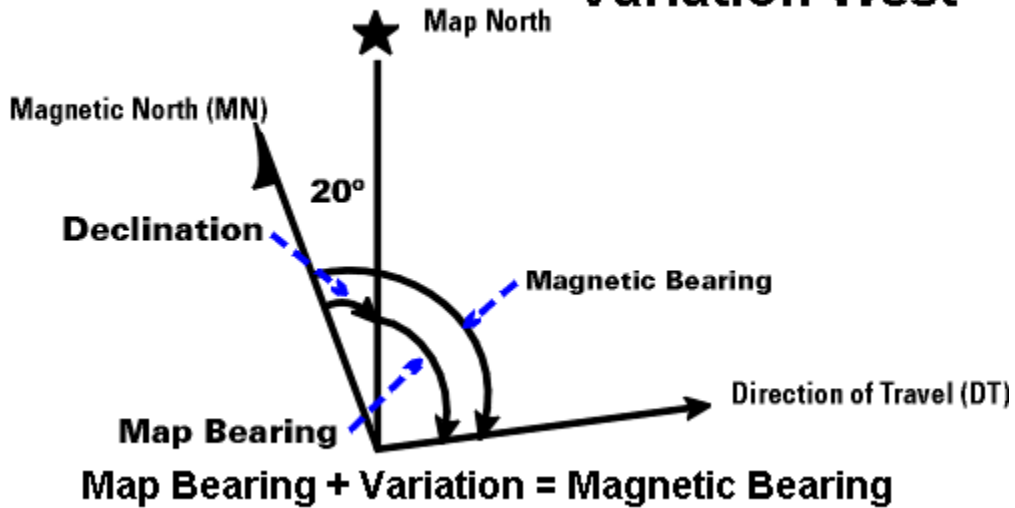
Where do I find how many degrees to add or subtract?

### Answer:

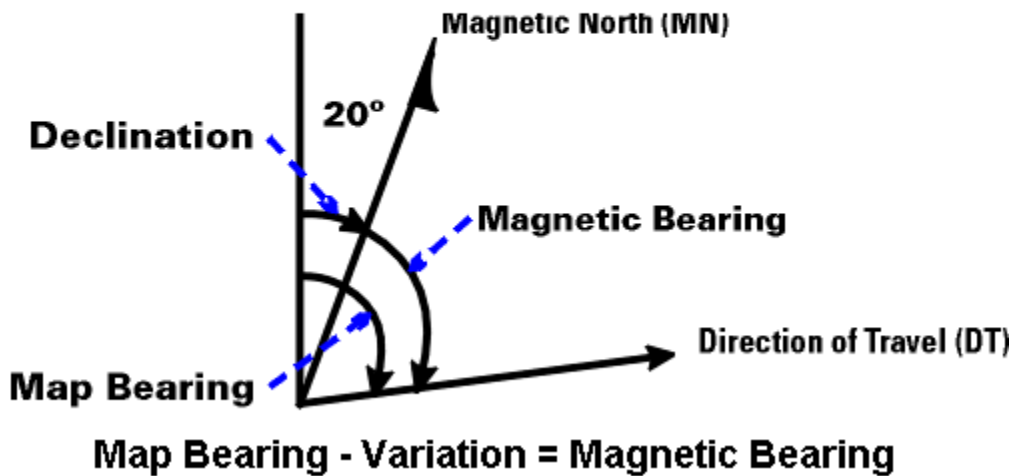
Look to the compass rose; the local variation will be printed on the inside of the compass rose. *Note: always compare the annual increase and date of the chart to see if there has been a significant increase in variation.*



## Variation West



## Variation East



### Final Considerations:

- Tides
- Current
- Wind
- Waves
- Low Visibility (Fog/Darkness)

### Sources:

- Sea Kayak Navigation, Franco Ferrero , Pesda Press-Wales (ISBN 0-9531956-1-9)
- Atlantic Kayak Tours/Expert Center:  
<http://www.atlantickayaktours.com/Pages/ExpertCenter/Navigation/Navigation-1.shtml>  
(Images)

## Wind, Waves and Land

### Wind

Wind above all other environmental conditions can potentially have the greatest impact on sea paddlers. Therefore, it is essential to assess wind speed and direction and understand its potential effect on paddlers at sea.

#### Terms:

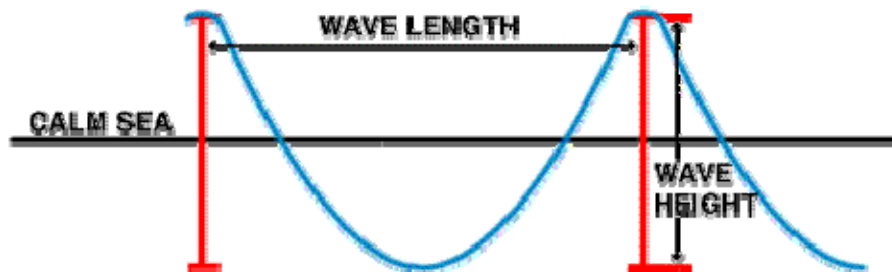
<b>Wind:</b>	Movement of air caused by differences in temperature and pressure
<b>Wind Direction:</b>	Is based on from where the wind is blowing
<b>Duration:</b>	How long the wind been blowing
<b>Velocity:</b>	How strong the wind been blowing
<b>Fetch:</b>	The uninterrupted distance over which the wind blows (measured in the direction of the wind) without a significant change of direction

### Waves

An ocean wave is the undulation (rising and falling movement) of the sea surface and is usually caused by winds. Waves are "born" (generated) in the fetch area (where wind and water interact) and travel across the sea until their "death" (collapse) as breakers on some distant shore. You might call this the life cycle of a wave. The wind and the water were and are its parents.

#### Factors that influence wave size:

<b>Duration:</b>	How long the wind been blowing
<b>Velocity:</b>	How strong the wind been blowing
<b>Fetch:</b>	The uninterrupted distance over which the wind blows (measured in the direction of the wind) without a significant change of direction



**Trough:** the part of the ocean wave that is displaced below the still water line

**Wave-Height:** vertical distance between a crest and the preceding trough

**Wave-Length:** the distance in a periodic wave between two points of corresponding phase in consecutive cycles

**Wave Period:** the time that elapses between the passage of two successive wave crests past a fixed point

### How do Waves Behave?



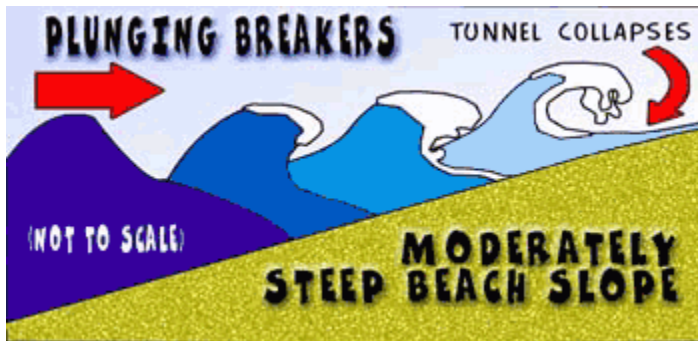
## Waves Break:

### Three "Types" of Breaking Waves

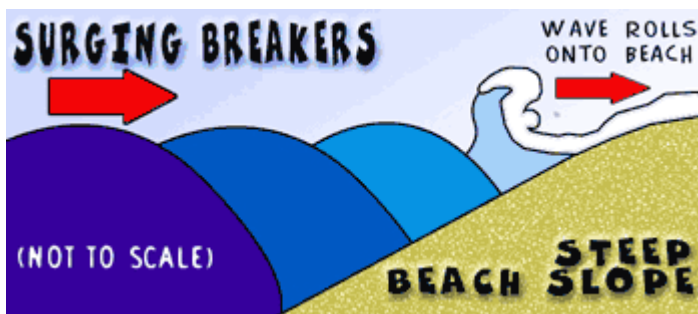
Spilling Breakers - Very flat nearly horizontal beach



Plunging Breakers - Steep beach



Surging (Dumping) Breakers - Very steep beach



## Waves Refract:

Waves can bend around land masses or shoals (i.e. water over shoal slows while the remainder of the wave in deep water continues on).

## Waves Reflect:

Waves can bounce off land masses.

## Sources:

- Ocean World: <http://oceanworld.tamu.edu>
- NOAA: <http://www.ndbc.noaa.gov/educate/educate.shtml>
- Wave Images from "Ocean Talk" by Naval Meteorology and Oceanography Command

## Beaufort Scale

Beaufort Number	Wind Speed in Knots* (mph)	Seaman's Term	Sea State	Effects on Land	Effects on Paddling
0	Less than 1	Calm	Sea like glass, flat, calm	Calm; smoke rises vertically	Easy going, perhaps boring for some. Good canoeing on sheltered bay. Practice your edging.
1	1 to 3 (1 to 3.5)	Light Air	Ripples with appearance of scales; no foam crests	Smoke drifts with wind direction; weathervanes do not move	Still easy to kayak or canoe. Go fishing out of boat. Perfect your strokes
2	4 to 6 (4.5 to 7)	Light Breeze	Small wavelets (6-8"). Crests have glassy appearance; no breaking waves	Wind is felt on face; weathervanes do not move; leaves rustle.	Novices learn what the heck weathercocking is all about. Experienced paddlers can still canoe.
3	7 to 10 (8.5 to 11.5)	Gentle Breeze	Large wavelets (2') Crests begin to break; scattered whitecaps	Leaves, small twigs move; small flags extended	Good for Intermediate paddlers to practice in. Fun trip for most. Take the canoe home. Buy a kayak.
4	11 to 16 (12.5 to 18.5)	Moderate Breeze	Small waves (3') with numerous whitecaps	Dust, paper, leaves raised up. Small branches move	Novices worry, Early intermediates may be apprehensive. Experienced paddlers have lots of fun.
5	17 to 21 (19.5 to 24)	Fresh Breeze/ <b>Small Craft Advisory</b>	Moderate (6') and many whitecaps and some spray	Small trees in leaf sway. Large flags ripple	Novices watch TV. Hard paddling into wind for most kayakers. Intermediates worry especially in following seas. Rescues are not easy.
6	22 to 27 (25 to 31)	Strong Breeze/ <b>Small Craft Warnings</b>	Larger waves (10') whitecaps everywhere with much spray	Larger branches of trees in motion; whistling can be heard in wires and sailboat rigging	Intermediates watch TV. Experienced kayakers wish they were watching TV. Rescues become difficult. Tsunami Rangers are having fun.
7	28 to 33 (32 to 38)	Moderate Gale	Large Waves (13') Foam blown up in streak. Sea heaps up.	Whole trees are in motion, resistance felt while walking against wind	Headway very difficult. Hard to turn. Wind may rip paddle from kayaker. It is very difficult to communicate.
8	34 to 40 (39 to 46)	Fresh Gale	Moderately high waves with longer length (18'). Crests break into spindrift.	Small branches and twigs are broken off. Hard walking against wind.	It's every man for himself. Constant battle to paddle. Kayak rescues are a miracle if they happen at all.

9	41 to 47 (47 to 54)	Strong Gale	High waves (23'). Sea begins to roll; visibility is affected.	Light structural damage occurs. Roof shingle torn from roof.	Intermediates dream they can handle this. Advanced have nightmares thinking about it. Kayak resues are all but impossible.
10	48 to 55 (55 to 63)	Whole Gale or Storm	Very high waves (30') sea looks white as foam; blown in dense streaks; heavy sea roll. Visibility is restricted.	Moderate structural damage occurs. Some trees uprooted.	This is a survival situation. The only options which may or may not work, are running before the wind or using a sea anchor.
11	56 to 63 (72.5 to 72.5)	Violent Storm	Exceptionally high waves (35'). Visibility is poor	Heavy widespread structural damage. Large trees uprooted.	Agnostics start to pray.
12	Over 64 (74)	Hurricane	Waves may reach 45' in height. Air is filled with foam and spray, visibility very poor.	Very heavy structural damage. Coastal areas evacuated, Very large trees broken or uprooted.	Atheists suddenly find religion in these waves taller than a 4 story building.

**ANorAK**

## Equipment:

Equipment selection is extremely personal; our recommendation is that you practice with your equipment. Below are some general guidelines; remember the amount and/or type of equipment you carry can increase or decrease based on environment, type of trip etc.

Generally a trip leader should have the following equipment:

- Personal Paddling Equipment
- Items to Fix People
- Items to Fix Boats
- Tools to Navigate
- Tools to Communicate

## Equipment Ideas:

### Personal Paddling Equipment

- Properly outfitted kayak
- Tow System (on your body)
- Paddle (spare?)
- Pump
- PFD/BA
- Helmet?
- Clothing
- Spray Deck

### Items to Fix People

- First Aid Training
- Simple First Aid Kit
- Warm Liquids
- Water
- Storm Cag
- Exposure Bag
- Emergency Shelter
- Spare Clothing
- Spare Food

### Items to Fix Boats

- Simple repair kit
  - Duct Tape
  - Flexible Window Flashing/Ice and Water Shield
  - Spare skeg or rudder parts
  - Electrical Tape
  - 2 Part Epoxy
  - A Large Float Bag

### Tools to Navigate

- Hikers Compass
- Chart/Maps
- GPS?
- Deck Mounted Compass

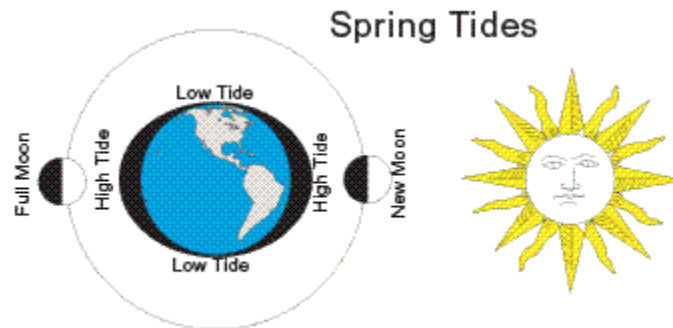
### Tools to Communicate:

- VHF Marine Radio
- Flares
- Smoke
- Sea Dye
- Cell Phone
- Whistle
- Lights
- Chemical Sticks

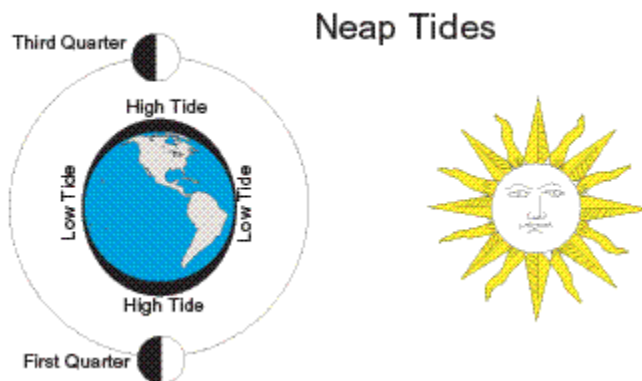
## Tides:

Simply put tides are the vertical movement of water and are the result of the gravitational pull of the moon and to a lesser extent the sun on the earth's oceans. These gravitational effects cause a bulge of water on either side of the earth (gravitational attraction on the "near" side and centrifugal force on the "off" side). As the earth rotates we pass in and out of these bulges of water therefore, the sea near us rises and falls giving us tides. The size of the bulges is dependant on the position of the sun and moon relative to the earth.

**Spring Tides:** When the earth, moon and sun are in line together they pull on the same part of the ocean resulting in a bigger bulge. We call this a "Spring" Tide (nothing to do with the season; instead it is derived from the Old English "springere" meaning to rise or spring up. Due to the position of these celestial bodies spring tides occur at New and Full Moons.



**Neap Tides:** When the earth, moon and sun are not in line but instead form right angles, the tidal range is at the lowest. These are called Neap Tides (acronym: **N**ear, **E**ven **A**s **P**ossible).



It is essential that paddlers understand tidal movement because it affects tidal streams and currents, exposed shoreline and features and helps us to assess launch sites, routes and level of difficulty.

**Rule of Twelfths:**

<b>A tide rises or falls (approximately)</b>		
1/12	of its range during the	1 <sup>st</sup> hour
2/12	of its range during the	2 <sup>nd</sup> hour
3/12	of its range during the	3 <sup>rd</sup> hour
3/12	of its range during the	4 <sup>th</sup> hour
2/12	of its range during the	5 <sup>th</sup> hour
1/12	of its range during the	6 <sup>th</sup> hour

For example, if the tide will rise 10 feet during a 6 hour cycle, the rule of twelfths suggests that after 2 hours it will have risen 2.5 feet.

$$\text{Ex. } (1/12 + 2/12) = 3/12 = 1/4 \times 10 = 2.5$$

**Sources:**

- Atlantic Kayak Tours/Expert Center:  
<http://www.atlantickayaktours.com/Pages/ExpertCenter/Navigation/Navigation-1.shtml>  
(Images)

## Currents:

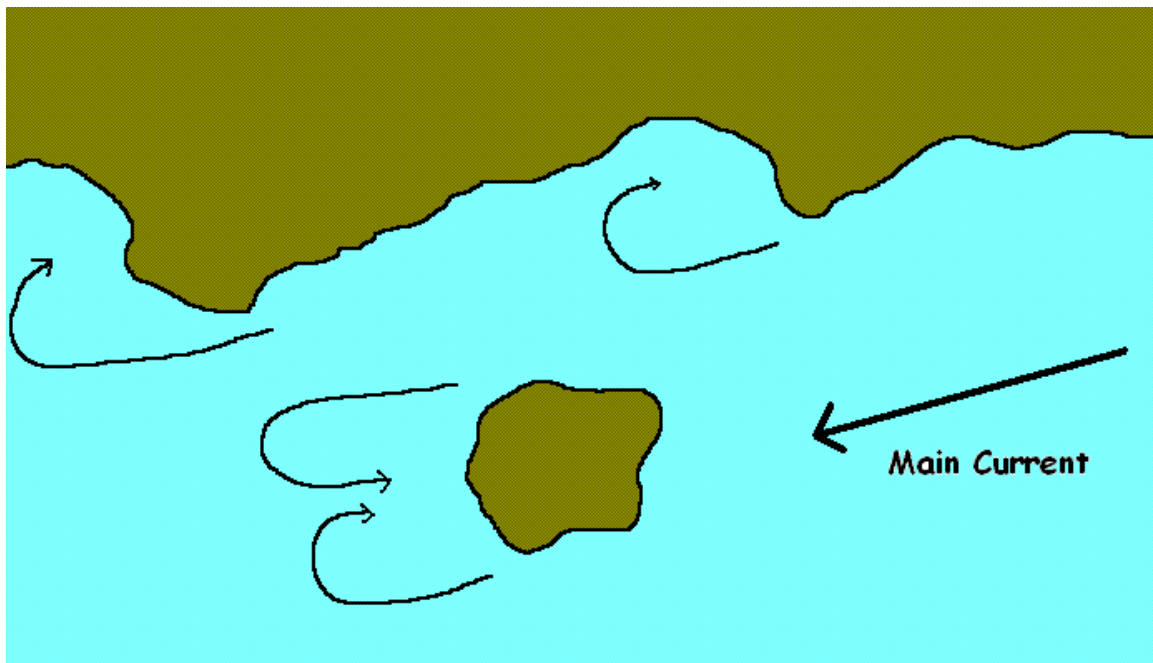
Current is the horizontal movement of water. Current follows basic principles of inertia and constriction; water wants to continue in the direction that it is flowing and it will go faster if it becomes constricted.

## Other Factors:

**Underwater Topography:** shallow water, deep water, rocks ledges, and reefs all have an effect on current.

**Land Mass Topography:** Headlands, islands, exposed ledge and rocks and human "made" objects all have effect on currents.

**Eddies:** An eddy is formed when moving water interfaces with a shoreline irregularity or object. The moving water against or around the obstruction creates friction which results in water spiraling and moving in the opposite direction (upstream) of the main current.



## What we need to know about current:

- What direction is it flowing?
- What is the current speed?
- What the above water and underwater topography like?
- Where is it pushing my group?
- Can I use the current to my advantage?

## The 50/90 Rule:

- At the end of the 1<sup>st</sup> hour the current is 50% of Max
- At the end of the 2<sup>nd</sup> hour the current is 90% of Max
- At the end of the 3<sup>rd</sup> hour the current is at Maximum Speed
- At the end of the 4<sup>th</sup> hour the current is at 90% of Max
- At the end of the 5<sup>th</sup> hour the current is at 50% of Max
- At the end of the 6<sup>th</sup> hour the water is slack



## Risk and Sea Kayaking

Safety in open water environments is relative and should not be considered an absolute. After all, we often set out on the sea or big lakes in 16-18 foot boats with a human engine, and at times travel long distances, occasionally in conditions.

In order to craft "safer" sea kayaking experiences we must first to terms with the fact that risk cannot be eliminated from sea kayaking without eliminating the essential joys of paddling. Second, with this understanding, we should look at each journey objectively and determine both the objective and subjective risks involved. Third, once these risks have been identified we should develop action plans to mitigate their effect on ourselves and our group.

Mitigation of risk and management of incidents before they deteriorate into the "poo zone" falls under three categories: PEOPLE, EQUIPMENT and ENVIRONMENT.

People	Equipment	Environment
<ul style="list-style-type: none"> <li>• Personal Assessment (Do I have the personal skills for this journey as a leader or participant?)</li> <li>• Do folks have the appropriate skills for the journey? (Remember "expertise" is relative)</li> <li>• Fitness Level</li> <li>• Food (Have they eaten, do they have food for the journey?)</li> <li>• Clothing (proper thermal protection and spare clothes)</li> <li>• Pre-existing illness or injury (Often folks may be reluctant to share this information.)</li> <li>• Water (Are they hydrated, do they have water for the journey?)</li> </ul>	<ul style="list-style-type: none"> <li>• Is it appropriate functional and maintained?</li> <li>• Accessibility (Where is clothing, medications, flares, water etc. stored?)</li> <li>• Have they used their equipment before and/or has it been used in conditions?</li> <li>• Bulkheads and flotation</li> <li>• Kayak fit</li> <li>• What are the group resources, any spares?</li> <li>• Are my electronics charged up?</li> </ul>	<ul style="list-style-type: none"> <li>• Swell</li> <li>• Wind speed, direction and fetch</li> <li>• Tide</li> <li>• Current</li> <li>• Lee or weather shore</li> <li>• Landing zones and No landing zones</li> <li>• Water temperature</li> <li>• Air temperature</li> <li>• Forecast</li> <li>• Escape routes</li> </ul>

## Incident Management "When things start going wrong...."

### IM Top Tips:

- Don't make a mountain out of a mole hill.
- Manage problems as early as possible.
- If you haven't planned for it, **IT** will happen to you or your group.
- Incidents don't get sorted out by committee, someone must take charge. If feelings get damaged debrief it later.
- You are the most important person to yourself, the group and the victim, the group comes second and the victim last.
- Think big picture! I.E. where is the wind/tide taking us, where is the nearest egress?
- If possible delegate therefore, you are able to keep an eye on the big picture.
- Boat repair: Save the elaborate repairs for land. While on water your goal is to get the boat to shore.
- If someone in your group is cold the others are cold; if you (the leader) are cold then assume that everyone is cold and the group is in danger.
- A rescue isn't over until the rescuee is home.
- Capsizes are contagious; manage the group.
- Don't wait until things have completely gone pear shaped to involve other agencies i.e. the coast guard take time.
- Make sure your kit is accessible PFD and Day Hatch.
- Tow lines must be immediately deployable.

### Signaling for Help

Signaling equipment is divided into two categories, some items fall into both:

#### Tools that Raise Alarm

- VHF Radio
- Mobile Phone
- Aerial Flares
- Whistles

#### Tools that attract a rescuers attention

- Hand Flares/Smoke
- Signaling Mirrors
- Sea Dye
- Strobes
- Reflective Tape/Clothing

All signaling equipment should be accessible from your cockpit. Always file a float plan with a reliable person on terra firma who cares about your return.

### Sources:

- "Sea Kayak Safety," Cailean Macleod. [www.peakwavecoaching.com](http://www.peakwavecoaching.com)

## Communication:

**Objective:** A trip leader must understand the possibilities, options and limitations of communication and signaling for both emergencies and non-emergencies in their area of operations.

### Communication/Signaling Materials:

- VHF Marine Radio	-Cell Phone	-Flares	-Whistle
-Paddle	-Strobes	-White Lights	-Dye
-Signal Mirror	-Strobes	-Waterproof Containers	

**Best Practice:** Exercise good judgment and avoid emergencies.

### Cellular Phones:

#### Pros:

- Widely accessible
- No specialized training
- Allows you to contact various agencies i.e. SMC Switchboard.

#### Cons:

- Cannot provide ship to ship communication
- Distress calls can only be heard/monitored by one party
- Cell phones are designed for land based service; cover off shore is dodgy

### VHF Marine Radios:

#### Pros:

- Monitored by Coast Guard, various rescue agencies and other vessels monitoring safety/hailing/distress channels
- Allows user access to storm warnings, weather information and urgent marine information broadcasts
- All vessels must answer a "mayday" call
- A VHF Marine Radio can be used anywhere in the world

#### Cons:

- Signal sent is only as strong as the battery
  - Handhelds have a "line of sight" reception (approx. 2 miles)
  - False "mayday" calls are a federal offense
  - Conversations are not private
  - Some specialized knowledge/training is required
- None of these are reason to not carry a VHF!**

### Basic Marine Radio Channels:

#### VHF Channels

6 Safety Vessels

12 Port Operations

16 Calling Distress/Safety

22 USGG Liaison (after establishing commo. on Ch. 16)

68 Ship to Ship and Ship to Coast

69 Ship to Ship and Ship to Coast

71 Ship to Ship and Ship to Coast

72 Ship to Ship Only

WX 1-3 Weather Broadcasts

**Basic VHF Communication Protocol:**

- Monitor Channel 16
- Make sure channel is free
- Limit call to 30 sec.
- No unnecessary talk
- Make no more than 3 calls at 2 minute intervals
- Repeat after 15 minutes

Call Type:	Reason	Channel	How to Call
Securite "saycuritay"	Used to advise vessels of your presence	VHF 16	"Securite-Securite-Securite, this is sea kayak group "_____""
Pan-Pan "Pahn,Pahn"	Urgency signal used to alert other vessels of a "very urgent" situation regarding the safety of your vessel or person	VHF 16	"Pan-Pan-Pan, this is sea kayak group "_____""
Mayday	An emergency signal to alert other vessels of imminent danger requiring immediate help i.e. loss of life, vessel	VHF 16	"Mayday-Mayday-Mayday, this is sea kayak group "_____""

**Mayday Example:**

"Mayday-Mayday-Mayday, All Stations" "This is sea kayak group "\_\_\_\_\_"" we have a paddler experiencing severe chest pain." "We require immediate rescue by motorized vessel, 1 mile southeast of Isle Styx." We are six kayaks the sick paddler is 64 years old is pale, short of breath and suffering crushing chest pain." "I will be listening on Channel 16." "This is sea kayak group "\_\_\_\_\_"". OVER"

**Final Thought:**

Signaling is a skill, practice!

## Hypothermia

**Hypothermia-** Lowering of the core body temperature to level where normal brain & muscle functions are impaired.

**Thermoregulation:** Maintenance of the body's core temperature based on a balance of Heat Production, Heat Retention and Heat Loss. (Managed by the brain and performed by the skin via the vasculature)

**Thermoequilibrium:** The balance that is monitored and managed by the brain.

### How Heat Is Lost:

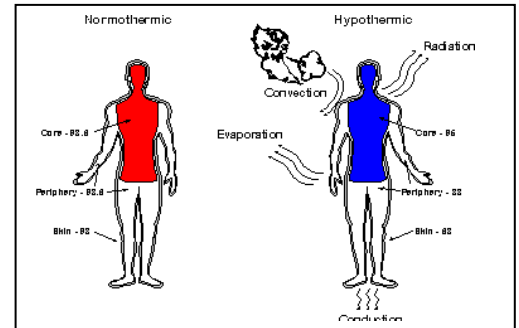
- Radiation
- Conduction
- Convection
- Evaporation

### How Heat Is Retained:

- Size/Shape
- Insulation (Clothing/Layering/Type)
- Fat (as insulation)
- Vasoconstriction

### How Heat is Produced:

- Basal Metabolism (Burning Glucose as fuel to produce heat)
- Exercise-muscle activity
  - Voluntary (jumping jacks)
  - Involuntary (shivering)

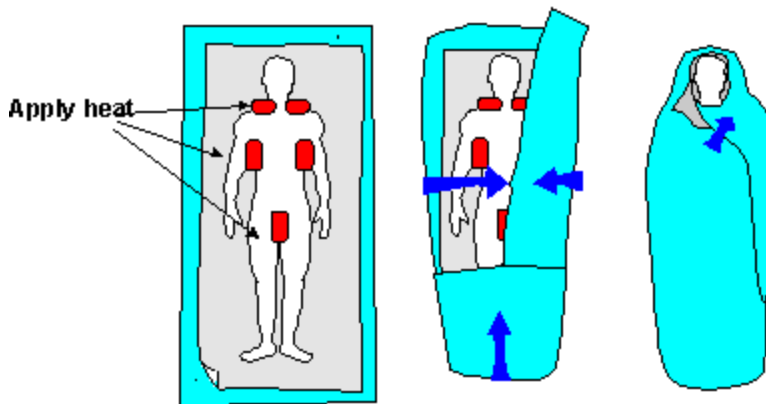


Stage	Core Temperature	Signs and Symptoms
Mild Hypothermia	97°	-Brain Fails/Judgment Impaired/Survival Instincts Impaired/Apathy/Confusion/Withdrawn
	96°-95°	-Fine Motor Skills Impaired/ Shivering Begins (Uncontrollable)
Moderate Hypothermia	95°-93°	-“UMBLES”/Shivering Increases
	93°-90°	-Intense Shivering/PT. Unable to Walk/Difficulty Speaking
Severe Hypothermia	90°-86°	-Convulsive Shivering/PT. Adopts Fetal Position/PT. Unable to Talk
	86°&Below	- <b>Metabolic Icebox</b> -unconscious, ashen gray, may present pulseless and breathless.

Stage	Treatment
Mild Hypothermia	<input type="checkbox"/> Remove From Danger and Further Exposure
	<input type="checkbox"/> Reduce Heat Loss (remove wet clothing/add dry layers/increase physical activity/shelter)
	<input type="checkbox"/> Add Fluids and Fuel (hydrate/liquid Jell-O®/Simple Sugars then More Complex)
Moderate Hypothermia	<input type="checkbox"/> Remove From Danger and Further Exposure
	<input type="checkbox"/> Reduce Heat Loss (remove wet clothing/add dry layers/increase physical activity ((if Possible))/shelter)
	<input type="checkbox"/> Hypothermia Wrap (Figure H-1)
	<input type="checkbox"/> Add Fluids and Fuel-If Conscious (hydrate/liquid Jell-O®/Simple Sugars then More Complex)
Severe Hypothermia	<input type="checkbox"/> Remove From Danger and Further Exposure
	<input type="checkbox"/> Reduce Heat Loss (remove wet clothing/add dry layers/increase physical activity/shelter) Hypothermia Wrap (Figure H-1)

Figure H-1:

## Hypothermia Wrap



### Special Considerations: Sea Kayaking

- Water Temperature, Duration of Exposure, Patients Thermal Protection
- Rescues: Scoop?
- Anyone with a diminished mental status poses a significant management challenge on open water: i.e. airway management, kayak stabilization, towing, re-warming.
- Re-warming at sea is difficult, are you prepared? Where are extra layers stored, hot liquids, etc.
- Landing: identifying the closest landing zone.

### Leader's Checklist:

- Pre-Trip Packing and Preparedness
  - Conduct a thorough Shakedown!
    - Is the packing list appropriate for the activity and water temperature?
    - Thermal Protection: wet suits vs. dry suits
    - Are my clients prepared for the "worst case scenario"?
  - Leader's Boat!
    - Resources necessary for a hypo-wrap.
    - Extra clothing in a dry bag, large jacket in day hatch.
    - Thermos of warm, sweet liquids (in day hatch).
- In the Field
  - Role Model/Lead By Example
    - Dress appropriately
    - Hydrate frequently
    - Snack Often (quick burning carbs)-"eat lunch throughout the day"
  - Stay warm
  - Constant Assessment
    - Yourself
    - Clients
    - Environment

## RULES OF THE NAUTICAL ROAD

The following is the briefest of summaries of this topic. BCU 4 star level of knowledge.

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Navigation Rules were enacted by Congress to promote safe passage, set requirements for navigation lights and day shapes, steering & sailing rules, sound & distress signals. First International Rules est 1889, most recent are called "72 COLREGS" by the Coast Guard. US Inland Navigational Rules apply to most harbors, bays, rivers & inlets inside the local areas "line of demarcation". You are captain (C) of your vessel (V) and hence responsible for the result of your actions. Kayakers are responsible for knowing these rules which do engender respect from other responsible boaters.

**Responsibility** - Obligation to use best judgment at all times to avoid collisions.

The Rule of Good Seamanship - Captain (C) must obey the rules, but also must look beyond the strict wording to operate safely. C must take all precautions required by ordinary practice of seamanship & circumstances.

The General Prudential Rule - C must consider all dangers of navigation, collision & special circumstances, including the limitations of the vessel. C must insure that V is properly manned & equipped including appropriate charts, weather info, etc and have knowledge of others maneuvering practices.

**Risk of Collision** - C must use 'all available means' to evaluate and avoid the risk of collision. Risks arise from poor seamanship, rule violations, judgment errors, weather & mechanical problems.

**Action to Avoid Collision** - C shall take positive, timely action with good seamanship. Alterations of course and speed shall be clear to other V. ex: If waiting for another boat to cross, stop paddling and alter course 90 degrees.

**Safe Speed** - All vessels must proceed at a safe speed at all times and be able to take proper and effective action to avoid collision. Can Kayakers maintain a safe speed in tidal currents and harbor entrances?

**Restricted Visibility** - V shall only proceed in a manner adapted to prevailing conditions & visibility (fog, mist, rain, night). Display navigation lights, sound proper signals.

**Look Out** - All V's must keep a proper look out 'by all available means'.

**Sound & Light Signals** - Power driven vessels.

1 short blast = altering my course to starboard

2 short blasts = altering my course to port

3 short blasts = reversing

5 short blasts = warning. If worried or don't understand.

**Crossing Situations** - Generally the V to the right has Right of Way, but not applicable when larger V is restricted by draft in narrow channels. Privileged V required to maintain course & speed and thus not sound signal. Burdened V must take early & substantial action to signal and avoid problems.



**Narrow Channels** - Keep to the right. Don't cross if you will hamper passage of V limited to narrow channel & don't impede restricted maneuverability V.

**Final Thoughts:**

**GO ONLY WHERE YOU ARE CAPABLE  
DO NOT CLAIM RIGHT OF WAY  
KAYAKERS LOSE TO THE TONNAGE RULE  
WALLOW IN THE SHALLOWS  
RED RIGHT RETURN IS WRONG FOR US, STAY OUT OF THE LANES  
NO ONE ELSE CAN OR WANTS TO SEE YOU  
HURRY ACROSS ALL FREEWAYS  
BE POLITE, SIGNAL YOUR INTENTIONS  
REMEMBER POWER BOATS THINK KAYAKS ARE JUST SPEED BUMPS**

## Rescues

**Rescues:** conducting rescues is part of guiding/instructing therefore, a guide should be proficient at a variety of rescues in a variety of sea states (don't practice rescues only in flat water conditions). Efficiency is paramount; the SMCWP standard is a client should be in their kayak within 30 seconds of the guide making contact with the capsized boat (remember, the colder the water, the quicker the rescue).

**The Rescue Rule:** Person in and Water out. (The order is dependant upon the situation.)

**Be Advised:** The rescued paddler should always be assessed for hypothermia and/or injury; a guide should be able to conduct initial management of hypothermia and/or injury on the water.

### Skills:

#### Eskimo Rescues

- Parallel
- Bow Rescue
- Paddle

#### Hand of God

#### Assisted Re-entry

- Kayak positioning
  - Parallel kayaks (Bow to Stern)
  - Reversed kayaks (Bow to Bow)
- Client positioning
  - Client at Bow, Stern, Day Hatch of Rescuers Boat, Cockpit of Victims Boat?
- Types of Assisted Re-entries
  - Simple T
  - X
  - Scoop
  - Hook
  - Ladder

#### Draining the kayak

- Ramp Drag
- X
- Curl
- Pump (hand, foot, electric)

#### Types of Solo Re-entries

- Paddle float outrigger
- Paddle float re-entry and roll
- Re-entry and roll

#### Rescuing a swimmer

- Bow Carry
- Stern Carry
- Paddle Swim