## **SD** Logging

Finally we get to the fun stuff! Its time to log data from the GPS onto an SD card. First up we'll do a basic test to make sure the SD card system is working.

You'll need a microSD card to log data onto. Any capacity will do. Slide the microSD card into the silver socket. You can push it in and you'll feel it latch and click

To remove, push on the edge and it will pop out (be careful it doesn't fly across the room!)



## **SD** Card Library Update

If you are using an Leonardo or Mega, you will have to update the SD card library to add 'SD card on any pin' support. If you have an Uno/Duemilanove/Diecimila, this is not required.

First, find the "core libraries" folder - if you are using Windows or Linux, it will be in the folder that contains the **Arduino** executable, look for a **libraries** folder. Inside you will see an **SD** folder (inside that will be **SD.cpp SD.h** etc)

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C:\Users\lad	yada\Desktop\arduino-1.0.3\libraries\SD		earch SD		۶
Organize 🔻 🕺 Open	✓ Share with ▼ New folder				
☆ Favorites	Name	Date modified	Туре	Size	
🧮 Desktop 💡	鷆 examples	12/10/2012 12:50	File folder		
🖳 Recent Places	퉬 utility	12/10/2012 12:50	File folder		
踜 Projects	📔 File.cpp	12/10/2012 12:50	C++ file		3 KB
属 Downloads	📋 keywords.txt	12/10/2012 12:50	Text Document		1 KB
鷆 shared	README.txt	12/10/2012 12:50	Text Document		1 KB
퉬 Library	📋 SD.cpp	12/10/2012 12:50	C++ file		15 KB
	📋 SD.h	12/10/2012 12:50	Header		3 KB
🔚 Libraries 🔹 🔻					
SD.h Date m Header	odified: 12/10/2012 12:50 PM Date created Size: 2.67 KB	: 1/2/2013 11:34 AM			

In the **libraries** folder, make a new folder called **SDbackup**. Then drag the **SD** folder into **SDbackup**, this will 'hide' the old **SD** library without deleting it

Name	Date modified	Туре
EEPROM	12/10/2012 12:50	File folder
퉬 Esplora	12/10/2012 12:50	File folder
Eviernet	12/10/2012 12:50	File folder
Firmeta	12/10/2012 12:50	File folder
🛺 LiquidCrystal	12/10/2012 12:50	File folder
	12/10/2012 12:50	File folder
J SDbackup	2/18/2013 2:32 PM	File folder
🌗 Servo 🔿 Move to SDbackup	12/10/2012 12:50	File folder
퉬 SoftwareSerial	12/10/2012 12:50	File folder
퉬 SPI	12/10/2012 12:50	File folder
퉬 Stepper	12/10/2012 12:50	File folder
퉬 WiFi	12/10/2012 12:50	File folder
퉬 Wire	12/10/2012 12:50	File folder

Now we'll grab the new SD library, visit <u>https://github.com/adafruit/SD</u> and click the **ZIP** download button, or click the button below

Uncompress and rename the uncompressed folder **SD**. Check that the **SD** folder contains **SD.cpp** and **SD.h** 

Place the **SD** library folder your sketchbook libraries folder. You may need to create the libraries subfolder if its your first library. For more details on how to install libraries, <u>check</u> <u>out our ultra-detailed tutorial at http://learn.adafruit.com/adafruit-all-about-arduino-libraries-install-use</u>

Once installed, restart the IDE. Then open up the **Adafruit\_GPS->shield\_sdlog** sketch and upload it to your Arduino.

If you're using a Leonardo, uncomment the line // while (!Serial); in the top of the Setup() function - this will help make debugging easier.

If you are using an Uno/Duemilanove/Diecimila or compatible, Find these two lines **if (!SD.begin(chipSelect, 11, 12, 13**)) {

//if (!SD.begin(chipSelect)) { // if you're using an UNO, you can use this line instead And comment out the first one and uncomment the second one.

Make sure you have the switch set to **Soft Serial** and open up the serial monitor and check that you're connected at 115200 baud (or you'll get gibberish)

🛃 COM39
Send
\$GPGGA,000524.800,,,,0,0,,,M,,M,,*43
OK
Log
\$GPRMC,000524.800,V,,,,0.00,0.00,060180,,,N*49
OK
Log
\$PGTOP,11,2*6E
\$GPGGA,000525.800,,,,0,0,,,M,,M,,*42
OK Log
109
\$GPRMC,000525.800,V,,,,0.00,0.00,060180,,,N*48
Log
10g
-
▼ Autoscroll No line ending

If the SD card was initialized OK, it will read a sentence from the GPS, check the checksum and if its a proper sentence, and then log it.

You can customize this basic example by changing the **sendCommand** in the top of setup(), for example you can turn on different sentences (although RMC and GGA are the most desirable, we've found). Or change the update rate to 5Hz instead of 1Hz

You can also set it so only 'fixed' data is logged - that is, there has to be valid location data. Doing so reduces power usage and saves space but its harder to debug because you don't get the timestamps that are in the RMC sentences.