

## Messier Reboot

5 years ago, in January 2016, I started my *Classic Messier* logbook, observing and sketching the objects mostly visually, using my classic 3" Vixen FL-80S refractor (<https://www.cloudynights.com/topic/523941-classic-messier/?p=69879221>); I was covering the objects in no specific order, just season by season as they showed up on the night sky, and when in August 2016 I had gone through most of the Messiers, I started my *Classic Best NGC* observation project (<https://www.cloudynights.com/topic/547602-classic-best-ngc/?p=7390137>) based on a comprehensive object list which I compiled from different sources, including the RASC, SAC, Caldwell, Herschel-400 plus O'Meara's catalogs.

This "list based" approach had me jumping, observing and researching all types of deep sky objects: stars, GLOBs, OCs, reflection and emission Nebulae and Galaxies, in a mixture of young and old, near and far, back and forth in no particular order; This was fun enough, but after a year I started longing for a coherent mental map of the location, morphology and astrophysics of all these diverse objects, as seen in an overall structural and evolutionary context.

Thus, in February 2017, I started my Classic Rich Field (CRF) journey here (<https://www.cloudynights.com/topic/565226-classic-rich-field/?p=7682123>), which took me systematically from aging stellar streams and younger open clusters in the immediate solar neighborhood (our "Local Superbubble"), out to bright blazing newborn OB-associations (such as the Orion-Eridanus superbubble) in the Gould's Belt around the waist of our own "Local Bubble" in the Local Orion-Cygnus spiral arm, then further up the Local Arm to more distant stellar associations and emission nebulae in the spring Milky Way (the Cygnus superbubble and the inner Sagittarius Arm Eagle-Swan-Trifid-Lagoon complex), then further on to the outer Perseus arm in the autumn Milky Way (with the Cepheus Bubble, Cassiopeia Arc and Cassiopeia Window), and finally leaving our Milky Way galaxy behind to sweep up the nearby galaxies in the Local Sheet and the surrounding Ursa Major and Virgo galaxy superclusters, all the way out to the far far away "Great Wall" galaxy filaments in Hercules, Coma, and beyond.

After a couple of years with the CRF project, I basically put it "on hold" to concentrate more on our solar system objects, including the 2020 Venus and Mars oppositions (<https://www.cloudynights.com/topic/617743-classic-planet-observation/?p=10758807>) plus a survey of the Lunar Surface features (<https://www.cloudynights.com/topic/483673-the-classic-moon/?p=9809768>). The sun is now also slowly awakening to its 25 solar cycle, so there are more observations to be done in this area, -- but I feel I'm now ready to reboot my CRF DSO project.

In this my continued CRF logbook I'd like to "complete the circle" of my recent observations by once more taking the Messier object list as my starting point, -- but this time zooming in on the morphology and astrophysics of selected Messier objects in a cosmological evolutionary order, starting with nebulae (molecular clouds with emission or reflection nebulosity), then on to young open clusters and evolved older open clusters, then remnants of dying stars (supernovae and planetary nebulae), all in our own Milky Way, and finally moving on to selected Messier global clusters and other galaxies surrounding our Milky Way.

Here's a (preliminary) overview of the Messier objects according to this plan:

<https://drive.google.com/file/d/1myHO2vuHmAzolHGCDsRWxi7HMzGSaSrF/view?usp=sharing>

And link to the CRF summary:

<https://drive.google.com/file/d/1CN1ezSo2ZdEuOMKrnjD9f8oZM-riwUGV/view?usp=sharing>

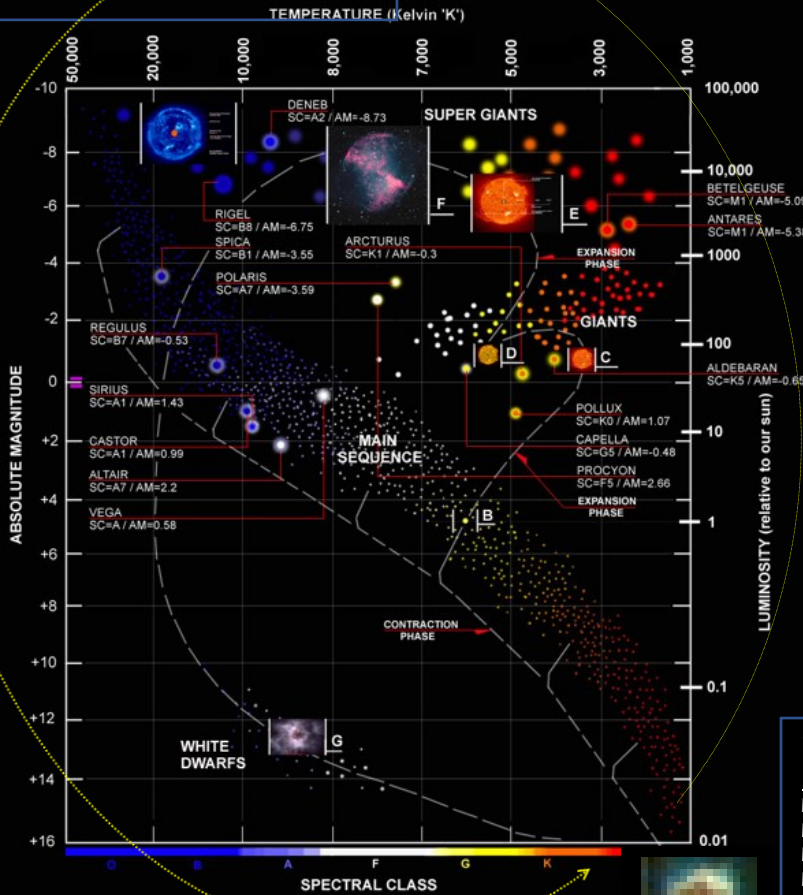
3: Supernovae [1] &  
Planetary Nebulae [4]

M	NGC	Type	Con	Name
M01	N1952	SNR	Tau	<i>Crab</i>
M27	N6853	PN	Vul	<i>Dumbbell</i>
M57	N6720	PN	Lyr	<i>Lyra Ring</i>
M76	N650-651	PN	Per	<i>Little Dumbbell</i>
M97	N3587	PN	UMa	<i>Owl</i>

## IIO MESSIER OBJECTS

2: Open Clusters [27+4+2]

OC	NGC	Con	Myr	pc	Name	Galaxy Arm
M24	I4715	Sgr	220	3070	<i>SgrCloud</i>	<i>Scu-Cen</i>
M17	N6618	Sgr	1	2200	<i>Swan</i>	<i>Sgr Arm</i>
M11	N6795	Scu	250	1900	<i>WildDuck</i>	
M16	N6611	Ser	1.3	1800	<i>Eagle-OC</i>	
M08	N6530	Sgr	2	1600	<i>Lagoon-OC</i>	
M20	N6514	Sgr	0.4	1600	<i>Trifid-OC</i>	
M26	N6694	Scu	85	1600	<i>Puffball</i>	
M18	N6613	Sgr	17	1296	<i>BlackSwan</i>	
M21	N6532	Sgr	12	1205	<i>Firefly</i>	
M25	I4725	Sgr	92	613	<i>Beetle</i>	<i>Interarm</i>
M23	N6494	Sgr	300	628	<i>Bat</i>	
M06	N6405	Scu	94	487	<i>Butterfly</i>	
M07	N6475	Scu	224	280	<i>Ptolemy</i>	
M29	N6913	Cyg	10	1800	<i>Llama</i>	<i>Ori-Cyg</i>
M44	N2632	Cnc	830	187	<i>Beehive</i>	
M45	Cr42	Tau	125	136	<i>Pleiades</i>	
M40	WNC4	Uma	140		<i>Double-Star</i>	
-----SUN-----						
M39	N7092	Cyg	280	311	<i>Triangle</i>	<i>Ori-Cyg</i>
M47	N2422	Pup	73	490	<i>The-Q</i>	
M34	N1039	Per	180	499	<i>French-Lilly</i>	
M41	N2287	CMA	240	710	<i>Tiny-Beehive</i>	
M48	N2548	Hya	400	770	<i>The-Lambda</i>	
M67	N2682	Cnc	4000	908	<i>Crawfish</i>	
M35	N2168	Gem	180	912	<i>Ram's-Head</i>	
M50	N2323	Mon	130	1000	<i>The-S</i>	
M93	N2447	Pup	390	1037	<i>Arrow-Head</i>	
M46	N2437	Pup	250	1510	<i>The-Sieve</i>	
M36	N1960	Aur	25	1330	<i>WaterFlea</i>	<i>Interarm</i>
M37	N2099	Aur	347	1400	<i>The-Tick</i>	
M52	N7684	Cas	160	1400	<i>Spider</i>	
M38	N1912	Aur	316	1400	<i>JumpingFrog</i>	<i>Per</i>
M103	N581	Cas	16	3000	<i>The-Fan</i>	



1: Emission & Reflection Neb. [4+3]

M	NGC	Name	Sagittarius Arm
M08	N6523	Lagoon-Neb.	Sgr
M16	I4703	Eagle-Neb.	Sgr
M17	N6618	WhiteSwan-Neb	Sgr
M20	N6514	Trifid-Neb	Sgr
M	NGC	Name	Orion-Cygnus Arm
M42	N1976	Great Orion	Ori
M43	N1982	De Marian	Ori
M78	N2068	Frosty Window	Ori

4: Globular Clusters [30]

M	NGC	Grp	Con	Main Bulge
M28	N6626	M-B	Sgr	
M62	N6266	M-B	Oph	
M69	N6637	M-B	Sgr	
M107	N6171	M-B	Oph	<i>Spider</i>
<i>Main Disc</i>				
M12	N6218	M-D	Oph	<i>Gumball</i>
M15	N7078	M-D	Peg	
M22	N6656	M-D	Sgr	
M71	N6838	M-D	Sge	
<i>Gaia-Enceladus</i>				
M02	N7089	G-E	Aqr	
M13	N6205	G-E	Her	
M30	N7099	G-E	Cap	
M56	N6779	G-E	Lyr	<i>Snowball</i>
M75	N6864	G-E	Sgr	
M79	N1904	G-E	Lep	
M92	N6341	G-E	Her	
<i>Helmi Stream</i>				
M03	N5272	H99	CVn	
M53	N5024	H99	Com	
M06	N4590	H99	Scu	
M72	N6981	H99	Aqr	
M05	N5904	H99	Ser	
M68	N4590	H99	Hya	
<i>Sgr Dwarf</i>				
M54	N6715	Sag	Sgr	
<i>Low Energy</i>				
M04	N6121	L-E	Scu	<i>Cat's Eye</i>
M09	N6333	L-E	Oph	
M10	N6254	L-E	Oph	
M14	N6402	L-E	Oph	
M19	N6273	L-E	Oph	
M55	N6809	L-E	Sgr	
M70	N6681	L-E	Sgr	
M80	N6093	L-E	Scu	

5: Galaxies [40]

M NGC LOCAL GROUP (5 Mly) Autumn

M31	N224	S	And	<i>Great Andromeda</i>
M32	N221	E	And	Dwarf to M31
M110	N205	E	And	Dwarf to M31
M33	N598	S	Tri	<i>Triangulum/Pinwheel</i>

M NGC LOCAL SUPERCLUSTER (Near~ 15 Mly)

M81	N3031	SA(s)ab	UMA	<i>Bode's</i>
M82	N3034	IO	Uma	<i>Cigar</i>
M94	N4736	(R)SA(r)ab	CVn	<i>CrocEye</i>
M64	N4826	(R)SA(rs)ab	Com	<i>Black Eye</i>
M83	N5236	SAB(s)c	Hya	<i>S.Pinwheel</i>

M NGC LOCAL SUPERCLUSTER (Far~ 30 Mly)

<i>M101-Cloud</i>				
M101	N5457	SAB(rs)cd	Uma	<i>Pinwheel</i>
M51	N5194	SAbc	CVn,	<i>Whirlpool</i>
M63	N5055	SAbc	CVn	<i>Sunflower</i>
M66	N3627	SAB(s)b	Leo	<i>E Triplet</i>
M65	N3623	SAB(rs)a	Leo	<i>E Triplet</i>
M96	N3368	SAB(rs)ab	Leo	<i>W Triplet</i>
M95	N3351	SB(r)b	Leo	<i>W Triplet</i>
M105	N379	E1	Leo	<i>W Triplet</i>

M NGC VIRGO SUPERCLUSTER (60-70 Mly)

- VIRGO-I Core
- UMA-I Association (SUPERGROUP)
- COMA-I Association (SUPERGROUP)

5: Galaxies 40 -- continued]

M NGC VIRGO-I CORE (60 Mly)

M87	N4486	cD pec	Virgo A	Wall W
M86	N4460	E2 Vir	Markarian	Wall W
M84	N4374	E1 Vir	Markarian	Wall W
M58	N4579	SAB(rs)b	Vir	Wall E
M59	N4621	E5 Vir		Wall E
M60	N4649	E2 Vir	Virgo C	Wall E
M49	N4472	E2 in Vir	Virgo B	Outskirts
M61	N4303	SAB(rs)bc	Virgo S	Outskirts
M85	N4382	SA0+(s)pec	Com	Outskirts
M88	N4501	SA(rs)b	Com	Hook N
M91	N4589	SB(rs)b	Com	Hook N
M89	N4552	E0-1	Vir	Hook S
M90	N4569	SAB(rs)ab	Vir	Hook S
M98	N4192	SAB(s)ab	Com	Triangle
M99	N4254	SSA(s)c	Virgo N	Triangle
M100	N4321	SAB(s)bc	Com	Triangle

M NGC COMA-I Association (60 Mly)

-- N4725,N4565 --<no Messier galaxies>

M NGC UMA-I Association (70 Mly)

M106	N4258	SAB(s)bc	CVn	
M108	N3556	SAB(s)cd	Uma	
M109	N3992	SB(rs)bc	Uma	
M74	N628	SA(s)c	Psc	<i>Phantom</i> 30 Mly
M104	N4594	SA(s)a	Vir	<i>Sombrero</i> 30 Mly
M102	N5866	SA0 Draco		<i>Spindle</i> 50 Mly
M77	N1068	(R)SA(r)c	Cetus	50 Mly