

---

---

# MOTOR SPORTS

---

---

## 1 Introduction

Motor sports is ingrained with a sense of show business and was deeply affected in 2020 by the novel coronavirus COVID-19 pandemic. Every category of motor sports was forced to react throughout the year by changing both schedules and venues. In addition, with global awareness of the environment on the rise, people involved in the sport spent the year questioning how motor sports can coexist with nature in an environmentally friendly manner. However, despite these difficult circumstances, the efforts of organizers, drivers, and teams ensured fans were kept entertained with thrilling races in all categories of the sport.

2020 saw fierce battles on the track, including come-from-behind drama at the last corner of the final race in one of Japan's domestic car race series. Outside Japan, Japanese teams had a very successful year. Toyota scored its third successive victory at the 24 Hours of Le Mans as well as the driver's title in the World Rally Championship (WRC), while Honda took three victories in Formula 1 (F1) and Nissan came second in the Formula E championship.

In the field of motorcycle racing, Suzuki took its first rider's title in MotoGP for twenty years and Kawasaki won the Superbike World Championship for the sixth successive year, demonstrating a powerful reminder of those companies' technical capabilities.

## 2 Car Racing Trends

### 2.1. Trends in Japan (Table 1)

In line with all other sports in 2020, motor sports in Japan could not escape the effects of the coronavirus pandemic, with major changes having to be made to calendars and the number of events cut down. Despite the impact of the pandemic, Super GT and Super Formula, the highest car racing categories in Japan, were able to carry out their whole race calendar as planned. The

championship fight in both series came down to the final race, generating excitement that would not have been overshadowed even in more normal circumstances. The Super GT championship in particular came down to the final corner of the final lap of the final race. The come-from-behind drama made for a season that will remain long in the memory.

### (1). Super GT (Fig. 1)

In 2020, the GT500 class of Super GT introduced the Class One technical regulations unified with the German Touring Car Masters (DTM) series. All three manufacturers involved in the series this year entered front-engine, rear-wheel drive cars, resulting in equally matched races without any special handicapping required.

The GT300 class introduced an amended handicap system based on team points and weight, which helped to create strongly competitive races even further down the field. The GT300 class attracted thirty entries, one more than the previous year, under three different performance categories. Twenty-three cars raced under the FIA GT3 regulations, four adopted the JAF GT300 rule book, and three followed the unique "mother chassis" (MC) rules.

The coronavirus pandemic caused the opening race to be postponed from April to July and the first four rounds were held without spectators. These restrictions were partially lifted for round five, which was held with a limited number of fans in attendance. To help prevent the spread of infection, the GT Association (GTA) asked attendees to carry out health checks for two weeks prior to the event. Temperature checks were carried out for all attendees at the gate, and access to the paddock and spectator areas was closely restricted. The same measures were kept in place for 2021.

For 2021, the specifications for common parts have been frozen, and the name of the weight handicap system will be changed to the Success-Weight System. The classes of the vehicles racing in the GT300 category will

**Table 1** Details and Results of Major Car Racing Categories in 2020

Category	Outline of races	Outline of vehicles	Participating Japanese manufacturers	2020 champions		Remarks		
				Drivers	Manufacturer			
World championships/FIA championships	F1	17 rounds (circuits: Styria, Silverstone, Monza, Bahrain, Abu Dhabi, etc.)	Dedicated race cars (formula) 1.6 -liter V6 turbocharged engines + energy regeneration	Honda	Lewis Hamilton (Mercedes)	Mercedes	The original 23 -race calendar was changed to 17 races with a delayed season start in July due to the coronavirus pandemic.	
	WEC	LMP1	Season held over 8 rounds between 2019 and 2020 (circuits: Silverstone, Fuji, Shanghai, Bahrain, Austin, Spa, Le Mans, Bahrain)	Dedicated race cars (prototypes) 2 WD (HVs may be 4 WD) HVs: free engine design + energy regeneration Non HVs: free engine design	Toyota	Jose Maria Lopez Kamui Kobayashi Mike Conway (Toyota)	Toyota	
		LM-GTE		2 WD cars based on commercially available vehicles NA engines: max. 5.5 -liter Turbocharged engines: max. 4.0-liter	—	Marco Sørensen Nicki Thiim (Aston Martin)	Aston Martin	
	Rally	WRC class	7 rounds on general roads (Monte Carlo, Sweden, Mexico, Estonia, Turkey, Italy, Monza)	4 WD cars based on commercially available vehicles Max. 1.6 -liter turbocharged engines	Toyota	Sébastien Ogier/ Julien Ingrassia (Toyota)	Hyundai	The calendar, which featured 14 rounds including one in Japan, was substantially curtailed due to the coronavirus pandemic.
		WRC-2 class	7 rounds on general roads (held at same venues as the WRC class)	4 WD cars based on commercially available vehicles Max. 1.6 -liter turbocharged engines	—	Mads Ostberg/ Torstein Eriksen (Citroen)		
		WRC-3 class	7 rounds on general roads (held at same venues as the WRC class)	4 WD cars based on commercially available vehicles Max. 1.6 -liter turbocharged engines	—	Jari Huttunen/ Mikko Lukka (Hyundai)		
		JWRC class	4 rounds on general roads (Sweden, Estonia, Italy, Monza)	Ford Fiesta R2 2 WD 1.0 -liter turbocharged engines		Tom Kristensson/ Joakim Sjöberg (Ford)		
	FIA Formula E	11 rounds on specially designed courses in cities (circuits: Saudi Arabia, Chile, Mexico, Marrakesh, Berlin)	Dedicated race EVs Power units: motor-generator unit (MGU) (linked to rear axle, during race: 200 kW, during qualifying: 250 kW) Batteries: standardized	Nissan	António Félix da Costa (DS Techeetah)		The original race calendar of 14 rounds was changed to 11 rounds, including three consecutive double-headers in Berlin.	
	Cup	WTCR	16 races at 6 venues (circuits: Zolder, Nürburgring, Slovakia Ring, Hungaroring, Aragon)	2 WD cars based on commercially available vehicles (FWD) 1.75 - to 2.0 -liter turbocharged engines HVs not permitted.	Honda	Yann Ehrlacher (Lynk & Co.)		The original race calendar contained 20 races at 10 venues, but the events scheduled for Asia (Inje, Ningbo, Macao, Sepang) were cancelled.
International series	Super GT	GT500 class	8 races at 3 venues (circuits: Fuji, Suzuka, Motegi)	Class One technical regulations unified with the DTM series were introduced Race cars with the same silhouette as commercially available GT cars 2.0 -liter inline 4 -cylinder turbocharged engines (same as DTM series)	Toyota Nissan Honda	Naoki Yamamoto Tadasuke Makino (Honda)	Of the original 8 venues on the calendar, the coronavirus pandemic forced the cancellation of events in Okayama, Thailand, Malaysia, Sugo, and Autopolis.	
		GT300 class		FIA GT3 vehicles (modification not permitted) JAF-GT300 (unique modifications permitted based on commercially available vehicles) JAF-GT300 MC (mother chassis) Balanced competition created via performance adjustments	Toyota Nissan Honda Subaru	Kiyoto Fujinami João Paulo Lima de Oliveira (Nissan)		
	DTM	9 rounds (circuits: Spa, Nürburgring, Zolder, Hockenheim, etc.)	RWD cars based on commercially available vehicles 2.0 -liter inline 4 -cylinder turbocharged engines (same as Super GT series)	—	René Rast (Audi)	Audi		
	IndyCar	14 rounds on oval circuits (Indianapolis, etc.), road courses (Mid-Ohio, etc.), urban courses (St. Petersburg, etc.)	Dedicated race cars (formula) 2.2 -liter V6 twin-turbocharged engines E85 fuel (blend of 85 % ethanol and 15 % gasoline)	Honda	Scott Dixon (Honda)	Honda	The coronavirus pandemic reduced the calendar from 17 to 14 rounds, most of which were held without spectators	

**Table 1** Details and Results of Major Car Racing Categories in 2020 (Continued).

Category	Outline of races	Outline of vehicles	Participating Japanese manufacturers	2020 champions		Remarks
				Drivers	Manufacturer	
Japanese championships	Super Formula	7 races at 6 venues (circuits: Suzuka, Okayama, Motegi, Sugo, Fuji, Autopolis)	Dedicated race cars (formula) 2.0-liter inline 4-cylinder direct-injection turbocharged engines	Toyota Honda	Naoki Yamamoto (Honda)	The first to fourth races on the original calendar were postponed and the season started from the fifth race in Motegi.
	Super Formula Lights	17 races at 6 venues (circuits: Suzuka, Okayama, Motegi, Sugo, Fuji, Autopolis)	Dedicated race cars (formula) 2.0-liter inline 4-cylinder direct-injection NA engines	Toms (Toyota) Tomei Engine Toda Racing	Ritomo Miyata (Toyota)	
	JRC	4 rounds on general roads (Shinshiro, Kyotango, Hokkaido, Karatsu)	Commercially available vehicles Divided into 6 classes (JN1 to JN6) based on displacement and layout (4 WD, 2 WD).	—	JN1: Hiroki Arai/Noritaka Kosaka (Subaru) JN2: Katsuya Nakahira/Keita Oya (Toyota) JN3: Takahito Sone/Shizuka Takehara (Toyota) JN4: Hiroshi Furukawa/Keiichi Kofuji (Suzuki) JN5: Tomoyuki Amano/Yukiko Inoue (Toyota) JN6: Shintaro Meiji/Kenta Satonaka (Toyota)	6 out of 10 races on the original calendar were cancelled.
Other	Dakar Rally	The 2020 event was held in Saudi Arabia. Total length: 7,500 km Start: Jeddah/finish: Qiddiya	Cars based on commercially available vehicles Dedicated racing trucks NA gasoline engines or turbocharged diesel engines	Toyota Toyota Auto Body Hino	Carlos Sainz/Lucas Cruz	



**Fig. 1** Super GT: NSX-GT of Team Raybrig<sup>(1)</sup>



**Fig. 2** Super Formula: DOCOMO Team Dandelion Racing<sup>(1)</sup>

also be re-defined. The new names are GT300 (equivalent to JAF-GT300), GT300MC (equivalent to FAF-GT300MC), and FIA-GT3 (equivalent to FIA-GT3).

**(2). Super Formula (Fig. 2)**

In 2020, the Super Formula series was affected by the coronavirus pandemic. The season opened in August and came to an end in December. The pandemic also resulted in restrictions being placed on people entering Japan from other countries. To support drivers unable to attend every race due to quarantine regulations or the like, the championship was decided based on the five best results of each driver from the seven races. Other measures to help prevent the spread of infection included shortening the duration of each event, adopting shorter races, and restricting movement in the paddock. Furthermore, starting from the fifth race, in response to

cooler temperatures, the use of tire warmers and other heaters was permitted in Japan's top formula series for the first time in twenty-five years.

**(3). Super Formula Lights**

The All-Japan Formula Three (F3) Championship, which came to an end in 2019, was reborn in 2020 as a championship known as Super Formula Lights, a new racing category unique to Japan. This series combines a standard single-make chassis equipped with the latest safety systems and a sole tire supplier, with entrants allowed to select between four suppliers of direct injection 2.0-liter engines designed specifically for racing. Super Formula Lights is still positioned as a feeder series for drivers aiming to step up to other race categories.

The effects of the global coronavirus pandemic forced major changes to the original race calendar, which even-



**Fig. 3** JRC: Subaru WRX STI Driven by Toshihiro Arai and Noritaka Kosaka<sup>(2)</sup>



**Fig. 4** F1: Aston Martin Red Bull Racing<sup>(1)</sup>

tually involved seventeen races over six rounds. Fiercely competitive races resulted in a total of seven different winners, three in the Overall category and four in the Masters' Class.

#### **(4). Japanese Rally Championship (Fig. 3)**

In 2020, the Japan Rally Championship (JRC) was badly affected by the coronavirus pandemic and the destruction of roads due to heavy rain in 2019. As a result, six out of the ten scheduled rounds had to be cancelled. Of the remaining four rounds, three were held on tarmac (at Shinshiro in Aichi Prefecture, Tango in Kyoto Prefecture, and Karatsu in Saga Prefecture) and one was held on gravel (Obihiro in Hokkaido). All events were held without spectators and strict measures were put in place to help prevent the spread of infection, such as the advance submission of health check forms including temperature readings, as well as temperature checks and disinfection before and after entering the service park on the day of the event. The scale of each round was also reduced.

Class categories remained the same as the previous year. In the top JN1 class, the four leading teams still had a chance of winning the overall title before the final round. Eventually, the team of Hiroki Arai and Noritaka Kosaka, who had demonstrated great pace in the previous year's series, emerged from this highly competitive battle as the series champions. At 27 years of age, these were the youngest champions in series history. Another major topic of conversation was the appearance of the new GR Yaris in the final event at Karatsu in Saga Prefecture as both a course car and an entrant in the field. The GR Yaris has massive potential as a rally car, being more than 200 kg lighter than current cars in the JN1 class. With adjustments to its suspension and drivetrain setups, the GR Yaris could well develop into a top level rally car. In contrast, although cars conforming to FIA Rally 2 regulations (the former R5 category) have been permitted to participate in the JN1 class since 2019, reg-

istration of these cars in Japan could not be completed in time for the 2020 series. Participation of these cars is planned for the future, and it is hoped that 2021 will see a fierce battle for success between a wide range of cars.

#### **(5). Super Taikyu Series**

The Super Taikyu Series started in Japan in 1991 as an event primarily for cars based on mass-production models, and has a distinguished history as Asia's largest pro-am race series. It is a team sport that has developed through both cooperation and competition between professional drivers and amateurs that want to experience the lifestyle of a racing driver.

Participants in races enjoy friendly competition while emphasizing fairness and putting safety first. In addition to placings in races, the focus of the Super Taikyu Series is to help the motor sports community to develop and grow.

Although the 2020 race calendar was severely disrupted by the coronavirus pandemic, 45 teams and 234 drivers participated across eight classes at the Fuji Super TEC 24 Hours, the longest event in the series.

## **2. 2. Trends outside Japan (Table 1)**

Continuing on from 2019, the major World Championships saw engrossing battles in Formula 1 (F1), the World Endurance Championship (WEC), and the World Rally Championship (WRC). However, all were seriously affected by the global coronavirus pandemic, which caused major changes to race calendars and venues, and led to the curtailing of each series over the course of the year. While events were put on hold, each championship made new attempts to keep fans entertained through virtual races and other approaches. Under these difficult circumstances, Honda announced that it would bow out of F1 in 2021. Audi and BMW also announced an end to their participation in Formula E with the 2020/2021 season. The impression given is of manufacturers starting to re-examine the shape of their future engagement in





**Fig. 5** WRC: Toyota Yaris<sup>(3)</sup>



**Fig. 7** WTCR: Honda Civic TCR<sup>(1)</sup>



**Fig. 6** WEC: Toyota TS050 Hybrid<sup>(3)</sup>



**Fig. 8** FIA Formula E: Nissan e.dams<sup>(4)</sup>

motor sports. In addition, 2020 also heralded the arrival of a turning point that might affect the whole of the world of motor sports, with the WEC and International Motor Sports Association (IMSA) announcing the introduction of a new category of prototype race car called Le Mans Daytona h (LMDh), and DTM moving toward electrification.

### **(1). FIA Formula One World Championship (F1) (Fig. 4)**

Although the opening of the 2020 season was delayed by event cancellations and venue changes caused by the coronavirus pandemic, 17 of the 23 originally scheduled races were held, starting in July.

The technical regulations were also revised for this season. Updates to power unit specifications were prohibited and, excluding some parts, teams were required to carry over chassis specifications into 2021. In addition, from the eighth round, drivers were only allowed to run a single engine control mode from the start of qualifying to the end of the race.

Lewis Hamilton took the Drivers' Championship for the fourth consecutive year, his seventh title in total, and the Mercedes-AMG Petronas F1 Team won the Constructors' Championship for the seventh consecutive year, their seventh title overall.

### **(2). FIA World Rally Championship (WRC) (Fig. 5)**

The original calendar of the WRC underwent major changes, with seven rounds being held, primarily in Europe. Works teams from Toyota, Hyundai, and Ford took part. The Drivers' Championship was won by Sébastien Ogier driving for Toyota after his move from Citroen, while the Manufacturers' Championship was won by the narrowest of margins by Hyundai. Although Rally Japan was scheduled to be held for the first time in ten years, the pandemic caused the event to be cancelled. However, the event has been penciled in on the 2021 calendar and is likely to attract a great deal of attention in that country.

### **(3). FIA World Endurance Championship (WEC) (Fig. 6)**

The 2019 to 2020 season, which was originally planned to end with the 2020 24 Hours of Le Mans, was changed to eight rounds up to the 8 Hours of Bahrain Grand Prix in November. Toyota, the only works team in the series won both the Drivers' and Manufacturer's titles. A Japanese driver won the Drivers' Championship for the second successive year, with Kamui Kobayashi taking over from Kazuki Nakajima. Changes to the regulations will be enacted in 2021 to encourage participation from more teams. The titles will be contested by cars equipped with lower cost hybrid systems and cars running on conven-



**Fig. 9** IndyCar: Rahal Letterman Lanigan Racing<sup>(1)</sup>



**Fig. 10** Gran Turismo Sport: TM & © Sony Interactive Entertainment Inc. Developed by Polyphony Digital Inc.<sup>(5)</sup>

tional engines alone.

#### **(4). World Touring Car Cup (WTCR) (Fig. 7)**

Unchanged from the previous year, the WTCR was contested under TCR touring car rules by front-wheel drive cars based on commercially available vehicles equipped with mass-produced turbocharged engines with a displacement between 1.75 and 2.0 liters. This year, the WTCR consisted of seven rounds. Unlike other events, the WTCR has no manufacturers' title, and instead features battles between drivers and customer teams. In 2020, a new common engine control unit (ECU) was adopted and the sole tire supplier was changed to Good-year. Although twenty races over ten rounds were originally planned, the series ultimately consisted of sixteen races over six rounds. From 2021, use of a new premium blended bio-gasoline fuel (E10) will be made mandatory.

#### **(5). FIA Formula E Championship (Fig. 8)**

This year marked the sixth season of the Formula E championship, and the second year using the Gen2 chassis. This season started in Saudi Arabia in November 2019. An unprecedented season played out, with races being held as planned until round 5 in Marrakesh at the end of February 2020. The coronavirus pandemic then caused a succession of postponements from round 6. As the pandemic abated slightly, six events, from round 6 to

round 11, were then held in Berlin during August. The number of entrants increased by two to twenty-four, with the existing manufacturer teams of Audi, BMW, Jaguar, and Nissan being joined by Mercedes and Porsche. The Gen2 race car is due to be used until season eight, which is due to be held from 2021 to 2022.

#### **(6). IndyCar Series**

The impact of the coronavirus pandemic in North America reduced the season calendar from seventeen to fourteen rounds, most of which were held without spectators. This year was the third year since the introduction of a universal aero kit. The cars have continued to evolve in that time, resulting in balanced races in which seven different drivers came out as winners. The largest event in the series was the 104th running of the Indianapolis 500. Takuma Sato took the checkered flag for the second time in his career. The Drivers' Championship was taken by Scott Dixon driving for Chip Ganassi Racing, with Honda winning its third consecutive Manufacturers' Cup, a string of victories that started in 2018.

#### **(7). Cooperation between the Automotive Industry and Esports (Fig. 10)**

Due to the impact of the coronavirus pandemic, 2020 saw even greater collaboration between esports and motor sports. With many races, including the 24 Hours of Le Mans and races in the F1, Super GT, and Super Formula series, at risk of cancellation due to the pandemic, it was decided to hold virtual esports events online. Top drivers from the world of real motor sports showed eye-opening skills in the virtual arena, creating top-quality races. This year provided valuable experience, showing the potential of team ups between the real and virtual worlds to vitalize motor sports' culture.

However, esports were also affected by the coronavirus pandemic, forcing changes to the conventional format of online preliminary qualifying rounds followed by final races at live events. Throughout 2020, each stage of every event was held online. Unlike soccer games and esports events in other genres, racing games and driving simulators require the same fundamental skills as in the real world. The skills to control a vehicle, the application of those skills over the whole of a lap, race strategy and maneuvering, positioning, and so on are basically unchanged between the two worlds. In the future, it is likely that motor sports will continue to take a broader interest in esports while collaboration continues between real and virtual races.

**Table 2** Details and Results of Major Motorcycle Racing Categories in 2020

Category		Outline of races	Outline of vehicles	Participating Japanese motorcycle manufacturers	2020 champions		
					Riders	Manufacturer	
World championships/FIM championships	Road races	Competition for position by racing around a circuit (approximately 110 km). Races are held in different countries and the total of points awarded at each race determines the annual standings. MotoGP is the highest class.	Dedicated bikes for MotoGP with 4 -stroke max. 1,000 cc engines	Honda Yamaha Suzuki	Joan Mir (Suzuki)	Ducati	
	Moto2			—	Enea Bastianini (Kalex)	Kalex	
	Moto3			Honda	Albert Arenas (KTM)	Honda	
	Superbikes	Same competition style as road racing, but uses a two-heat system of two races in each round.	Bikes with a commercially available max. 1,000 cc engine (2 -cylinder bikes are permitted a max. displacement of 1,200 cc.)	Honda Yamaha Kawasaki	Jonathan Rea (Kawasaki)	Kawasaki	
	Endurance	Road races in which teams compete for position with two or three riders alternating stints on a single bike over an extended period of time (8 or 24 hours).	Bikes with a commercially available max. 1,000 cc engine (2 -cylinder bikes are permitted a max. displacement of 1,200 cc.)	Honda Yamaha Suzuki Kawasaki	Etienne Masson Gregg Black Vincent Philippe (R1, 2) Xavier Simeon (R3, 4) (Suzuki)	Yamaha	
	Motocross	MXGP	Competition for position on a motocross (unpaved dirt or sand) track that lasts for 30 minutes + 2 laps (two-heat system). Races are held in different countries and the total of points over a year determines the standings.	Dedicated motocross bikes with a max. 4 -stroke 450 cc or 2 -stroke 250 cc engine	Honda Yamaha Kawasaki	Tim Gajser (Honda)	KTM
		MX2		Dedicated motocross bikes with a max. 4 -stroke 250 cc or 2 -stroke 125 cc engine		Tom Vialle (KTM)	Yamaha
	Trials	Competition to complete set courses within a time limit without touching the ground.	Dedicated trials bikes (no displacement restrictions)	Honda	Toni Bou (Honda)	Honda	
	Japanese championships	Road races (JSB1000)	Competition for position by racing around a circuit. Races are held at different circuits and the total of points over a year determines the standings.	Bikes with a generally commercially available max. 1,000 cc engine (2 -cylinder bikes are permitted a max. displacement of 1,200 cc.)	Honda Yamaha Suzuki Kawasaki	Kota Nozane (Yamaha)	
		ST1000				Yuki Takahashi (Honda)	
IA1 (motocross)		Highest class of the All Japan Motocross Championship. Competition for position on a motocross track lasting for roughly 30 minutes. Races are held at different tracks and the total of points over a year determines the standings.	IA1 class: dedicated motocross bikes with a max. 4 -stroke 450 cc or max. 2 -stroke 250 cc engine	Honda Yamaha Kawasaki	Kei Yamamoto (Honda)		
IA Super (trials)		Competition to complete set courses within a time limit without touching the ground. Highest class of the All Japan Trial Championship.	Dedicated trials bikes (no displacement restrictions)	Honda Yamaha	Tomoyuki Ogawa (Honda)		
Other		Dakar Rally	Held in the Middle East (Saudi Arabia). Total length: 8 ,000 km	Dedicated rally motorcycles (prototypes) 2 -stroke max. 450 cc engines	Honda Yamaha	Ricky Brabec (Honda)	



**Fig. 11** MotoGP: Suzuki GSX-RR<sup>(6)</sup>

### 3 Motorcycle Racing Trends

Table 2 lists the main categories of motorcycle races held inside and outside Japan, and the results of each

competition.

In 2020, the coronavirus pandemic caused some races after March to be rescheduled or cancelled. Close cooperation between the series organizers, promoters, and manufacturers that develop the bikes and run the teams resulted in an emphasis being placed on Internet-based broadcasts of races. As a result, although some events were held without spectators, fans were still able to enjoy the events virtually, and were rewarded by exciting races in all categories.

In, MotoGP, the pinnacle of motorcycle road racing, the opening round in Qatar was cancelled at the last minute due to the pandemic. Subsequently, strict protocols were put in place to help prevent the spread of in-



fection and regulations were tweaked to restrict updates being made to bikes. As a result, the MotoGP season reopened in July with a tough schedule of fourteen races in five months in Europe.

The tough schedule was compounded by the early loss of reigning champion Marc Marquez (Honda) due to injury. However, his absence resulted in highly competitive races won by nine different riders. The only Japanese rider in the series, Takaaki Nakagami (Honda) became the first Japanese to take pole position in motorcycle racing's top series for sixteen years. He was competitive throughout the season and positive results are expected next year.

In the final standings, consistent performance in the final rounds enabled Joan Mir to take the riders' title, the first championship for Suzuki in the premier class of motorcycle racing for twenty years (Fig. 11). Ducati won the Constructors' Championship for the first time in thirteen years. Fabio Quartararo (Yamaha) won the fastest qualifier award after taking four pole positions and Brad Binder (KTM) was named Rookie of the Year after a year of exciting and balanced races in which all manufacturers were competitive.

In the Moto2 class, the championship was won by Enea Bastianini (Kalex) with three wins, who stepped up to MotoGP in 2021. The only Japanese rider in Moto2, Tetsuta Nagashima (KTM) won the opening race in Qatar and remained in contention for the title throughout the season.

In the Moto3 class, six Japanese riders took part in every race, with Tatsuki Suzuki (Honda) taking a pole-to-flag victory in the third race in Andalusia. A highly competitive series of races resulted in Albert Arenas (KTM) taking three wins and the championship in his fifth year. Ai Ogura (Honda) took a podium place seven times and also remained in contention for the title until the end. Ogura finally finished in third, with only four points separating the top three, and stepped up to Moto2 in 2021.

The 2020 Superbike World Championship, a series based on commercially available motorcycles, was curtailed to eight rounds due to the coronavirus pandemic.

In the final standings, Jonathon Rea (Kawasaki) took his sixth consecutive title after a close battle with Scott Redding (Ducati). To the excitement of fans, the equivalent JSB1000 class of the All Japan Road Race Championship was won for the first time by Kota Nozane (Yamaha) and the ST1000 class, which places strict limits on



**Fig. 12** Dakar Rally: Honda CRF450 Rally<sup>(1)</sup>

the scope of modifications, was won by Yuki Takahashi (Honda).

In the Endurance World Championship, although the Suzuka 8 Hours was cancelled due to the coronavirus pandemic, the Suzuki Endurance Racing Team won its sixteenth title, and its first for four years.

The MXGP class of the Motocross World Championship was won by Tim Gajser (Honda) for the third time and for the second year in succession. Gajser faced powerful opposition from Jeffrey Herlings (KTM), who was unable to fight his way back to fitness after injuring himself in a fall in the middle of the season. Another strong rival, Antonio Cairoli (KTM), was in contention until the end before finally finishing second. Both Yamaha and Kawasaki put up a good fight after strengthening their rider lineups, and Glenn Coldenhoff won the first victory for a new manufacturer called Gas Gas in their debut season. Young riders Jorge Prado (KTM) and Mitchell Evans (Honda) showed impressive progress and 2021 is shaping up to be an exciting year in which younger riders will challenge the more established names.

The 2020 AMA Supercross World Championship was fought over fiercely by three riders and went to the final race. Eli Tomac (Kawasaki) narrowly triumphed over Cooper Webb (KTM) and Ken Roczen (Honda) to take his first ever Supercross crown.

In the All Japan Motocross Championship, the IA1 class was won by Kei Yamamoto (Honda), who showed his overwhelming superiority by winning overall victory in three out of the four rounds. This was his second successive title. Second and third places were taken by Toshiki Tomita and Yusuke Watanabe, respectively, riding for the Yamaha works team, which re-entered the championship this year.

The FIM Trial World Championship was won for an unprecedented fourteenth successive year by Toni Bou (Honda). The 1A class of the All Japan Trial Champion-





**Fig. 13** Super GT: Yokohama Tires<sup>(7)</sup>

ship was won by Tomoyuki Ogawa (Honda) for the tenth time. This was his eighth title in succession.

The Dakar Rally moved from South America to Saudi Arabia, the first time that the race had been held in the Middle-East. The route was completely unfamiliar to all drivers and was a suitable venue for the world's toughest off-road race. In the motorcycle category, KTM, Husqvarna, and Honda were joined by other manufacturer works teams such as Hero and Sherco. In the race, Ricky Brabec (Honda) showed good form over the early stages, taking the lead on the third day, before stretching away and taking the overall title. He was the first American winner of the Dakar Rally, and helped Honda take its first title in thirty-one years (Fig. 12). The end of the string of titles won by KTM in the event shows that the race has become more equal, and promises further competitive races to come.

As described above, motorcycle racing both inside and outside Japan continued to work hard to attract more fans in the 2020 season by harnessing the efforts of the whole industry, creating opportunities to raise media awareness throughout the season.

#### **4 Motor Sports Tire Trends**

Most categories of motor sports inside and outside of Japan use a sole tire supplier to reduce participation costs and create equally competitive conditions. Typical examples include the pinnacles of both car and motorcycle racing, F1 and MotoGP. In Japan, in addition to the Super Formula and Super Formula Lights championships, a new race series called the Formula Regional Japanese Championship that debuted in 2020 also uses a sole tire supplier. The WRC also decided to adopt a sole tire supplier in 2021. There is fierce competition between tire suppliers for these rights, with the WTCR switching to

Goodyear tires in 2020 and the Super Taikyu series switching to Hankook tires in 2021. Series inside and outside Japan are likely to continue the trend of adopting sole tire suppliers as new regulations are introduced, and further changes in suppliers are likely to occur.

However, some race series still persist with competition between multiple tire manufacturers. Worldwide, the race series that allows an almost unprecedented degree of tire competition is the Super GT series in Japan, with tires being supplied by four manufacturers (Bridgestone, Dunlop, Yokohama, and Michelin) (Fig. 13). The unique nature of the Super GT series is underlined by the fact that the DTM series, which features cars with the same technical specifications as the GT500 class, uses a single supplier. The top OK class of the All Japan Karting Championship also allows competition between three tire suppliers.

A number of other series in Japan require the use of commercially available tires and permit the participation of multiple suppliers. The 86/BRZ Race Series also allows participation by multiple tire suppliers from both inside and outside Japan, which is one reason why it has grown into a popular race series with a high number of participants. In addition, the All Japan Gymkhana, JRC, and All Japan Dirt Trial Competition series also allow competition among Japanese tire suppliers, prompting each manufacturer to launch new tires on a yearly basis.

Having multiple tire suppliers adds to the excitement of racing for both the entrants and spectators. However, although it was assumed that races in Japan would continue along these lines, the announcement by Bridgestone in September 2020 of plans to exit the racing cart business at the end of 2022 signal a movement away from multiple tire suppliers in certain race categories.

One major change in tire regulations has been the increase in rim size. In this way, bringing the size of tires more in line with those used on ordinary passenger vehicles should facilitate efforts to feedback racing tire technology into tires for normal cars. Ahead of F1, the FIA Formula 2 (F2) series adopted 18-inch tires in 2020. F1 intended to follow suit in 2021, but the impact of this change could not be assessed properly due to the coronavirus pandemic and the change has been put off until 2022.